AMERICAN AGRICULTURIST

FOR THE

Farm, Garden, and Household.

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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THE NOON-DAY HOUR ON THE FARM.—DRAWN BY R. E. ROBINSON.—*Engraved for the American Agriculturist.*

The human system taken in all its parts is a very wonderful self-governing, and at the same time, dependent machine. In order to keep this machine in good running order—and we are using the term machine in the highest sense—it must have food and rest. All experiments that have been tried to test the results of the absence of food upon the animal system, have ended, if carried to their fullest extent, in the same manner with that so often quoted experiment in horse keeping, in which, as related by the owner: "Just as I had got him so he would get along on one straw a day, he died." The system will assert its demands for food in the severe pangs of hunger, and the lack of rest will make itself known in involuntary sleep. Out of these necessities of the case, there has grown the common-sense custom of "taking a nooning" of an hour or so in the middle of the day, in which the system is replenished with food, and the nerves and muscles refreshed by a period of inactivity. A Spanish-American town is in mid-day hours as quiet as one in New England on the Sabbath. One from the North in visiting such countries is apt to look upon the people as indolent, but he soon falls in with the custom, and finds that the *siesta*, as the noon-day nap is called, and which is taken by the richest and poorest alike, is not a manifestation of laziness, a mere habit, but a wise compliance with the demands of the climate.

In the above engraving of an after-dinner scene upon the farm in early summer, or in "hoeing time," as we sometimes say, the artist has attempted to show the manner in which different members of the family pass the noon-day hour. The hired man is spending his time in the companionship of his pipe, while his thoughts may be wandering in a foreign land from which he came not many months ago. The boys—and by the way, who enjoy a *long* nooning more than they—are stretched upon the grass, one with a book, while the other is having a good time with old "Rover"—the joy of the young farmer's heart, and the best sheep dog in the neighborhood. The scene at the well is—well!—the old, old story?—we will let well enough alone. The head of the family finds his rest in the newspaper, and is refreshed with the knowledge of the doings of the great and active world beyond the boundaries of his farm. In the half hour dividing the labors of the morning from that of the afternoon, he acquires a fund of information that keeps him abreast with the world, and alive to the importance of his own calling. A little time thus taken from the toils of the day refreshes and strengthens the man, and makes the whole life fuller, and, therefore, nobler and better. The Noon-day Hour should not be a time of thoughtless inactivity, but a period of intelligent recreation.

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Contents of this Number.

[Articles marked with a star (*) are illustrated; the figure with the stars indicates the *number* of illustrations.]

Among the Farmers, No. 52.—"More Nice than Wise"—Earthen or Tin Milk Vessels—Peculiar Flavor—Granite Ware—Butter.....7*..183-184
Asparagus Bed, The.....193
Bee Notes for May.....178
Boys and Girls' Columns:—*The Doctor's Talks:* Kites. Puzzle Picture. Our Puzzle Box. Illustrated Rebus. A River Hunt. Another of the 'Ologies. Fishing and Fishers.....7*..196-198
Butter Making Without Churning*.....185
Catalogues Received.....205
Churn, To Fasten Down.....2*..185
Corn Markers.....185
Cottage for the Country—Costing $1,800.....4*..182
Cotton Seed Meal.....189
Cow, The Famous Jersey, "Alphea"*.....183
Crib, A Barn Corn.....3*..186
Diseases, Scrofulous, in Domestic Animals*.....187
Garden, Flower and Lawn.....173
Garden, Kitchen and Market.....173
Garden, The Fruit.....173
Gate, An Irrigating*.....185
Grapes, Some of the Newer.....2*..190-191
Grass, Bogus Bermuda.....2*..190
Greenhouse and Window Plants.....174
Handle for Cross-Cut Saw.....2*..187
Harrows and Harrowing.....188
Hay Sweeps.....2*..188
Hints and Helps for Farmers: A Self Fastening Bolt—A Mending Clamp—A Litter Basket—A Cow Curry Comb—Another Wagon Jack.....6*..189
Holder, A Ticket or Label*.....193
Household: A Thermometer Frame. *Home Topics:* Moving—Oiled Floors—Rag Carpets—Rag Peddlers. Out-Door Games. Lawn Tennis. Household Notes and Queries.....5*..194-195
Humbugs, Sundry.....176
Kennel, A Farm Dog*.....186
Labor, Distribution of, on the Farm.....186
Lamp, Another Orchard*.....193
Line of Draught in Plowing*.....189
Links for Mending Chains.....4*..188
Markets for May.....174
Milk, Something About.....184
Moulds, The White, on Plants.....5*..192
Noon-Day, The, Hour*.....171
Orchard and Nursery.....173
Phylloxera—Great Enemy to Grape Culture..5*..192-193
Pigs or Shoats for Villagers.....186
Poke, A Safe and Handy*.....188
Salt for Live Stock*.....187
Science Applied to Farming, LVII.....180
Sheep, Revival of Interest.....187
Sheep Washing.....189
Sled, A Manure.....2*..187
Soils, Exhaustion of.....182
Stone Boats.....188

INDEX TO "BASKET," AND OTHER SHORT ARTICLES.

Barrels, Coal Oil.....203
Beet, The Sugar.....175
Borer, The Apple Tree..179
Butter, Adulteration of..179
Calves, Black Leg in....204
Cholera, Chicken.....176
Column, The Weeklies Agricultural.....178
Corn Cobs.....204
Corn, To Measure.....179
Cow, Keep One.....175
Crop, The Corn.....178
Dakota, Winter in.....176
English Rentals.....204
Evergreens, Trimming up!79
Experiments, Our Field.204
Farm, Wis. Going to La.204
Farmers in Hard Times..177
Frost and Peach Trees..177
Frosts, Late.....177
Hens Eating their Eggs..177
Hoof, Contracted.....203
Horses, Balky.....176
Horses, Trotting.....204
Improvem'nt thro' Mules.178
Lawn Mowers.....177
Letters Not Answered...179
Like Produces Like.....179
Merchants, Commission.179
Milk, Feeding for.....175
Mucilage from Cherry Trees.....204
Name, Out of His.....204
Nebraska, Hortic'l in ...179
Oleomargarine, What it is175
Oranges, Bronzed.....204
Plowing.....179
Power, Portable Sweep..177
Rack, A Feed.....2*..204
Seeds, Buying of Strangers.....204
Seeds Enduring Cold...178
Sheep Disease in Engl'd-203
Sheep in Kansas.....204
Silica in Plants.....176
Snakes Swallow'g Young.204
Society, The Mass. Hort'l.178
Society, The N.Y. Hort'l.178
Sorghum—Early Amber.177
"Stagger Weed".....178
Stamps, A Million.....179
Standard of Poultry.....177
Station, Expm't'l N. J...179
Suggestions.....178
Sulphur for Ants.....204
Teeth, Index of Age.....204
Tillage, Cost of.....204
Toads Eating Bees.....204
Tree, Peach, A Veteran.177
Value, Increase in.....178
Vegetation, Retaining, Matter in Soil.....178
Vine, An Unfruitful.....204
Waste, A Great.....178

Australian Meat in England.—A steamer freighted with beef and mutton from Australia recently arrived in England after a successful voyage, the meat having been kept in excellent condition by the cold air process used here in transporting dressed meat from Chicago to the Eastern markets. Naturally the English people will prefer to purchase of their own colonists provided it does not cost anything for the patriotism. This source of competition is a matter of special interest to the American raisers and exporters of meat.

Calendar for May, 1880.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Mo'n rises.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Mo'n rises.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Mo'n rises.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	S	4 35	6 59	0 58	4 58	6 56	0 55	5 2	6 52	0 51
2	S	4 33	7 0	1 17	4 57	6 57	1 26	5 1	6 53	1 24
3	M	4 32	7 1	1 54	4 56	6 58	1 53	4 59	6 54	1 52
4	T	4 31	7 3	2 18	4 54	6 59	2 19	4 58	6 55	2 16
5	W	4 29	7 4	2 42	4 53	7 0	2 43	4 57	6 56	2 47
6	T	4 28	7 5	3 6	4 52	7 1	3 9	4 56	6 57	3 11
7	F	4 27	7 6	3 32	4 51	7 2	3 36	4 55	6 58	3 39
8	S	4 26	7 7	4 1	4 50	7 3	4 5	4 54	6 59	4 10
9	S	4 25	7 8	sets	4 49	7 4	sets	4 53	7 0	sets
10	M	4 43	7 9	8 54	4 48	7 5	8 48	4 52	7 1	8 43
11	T	4 42	7 10	9 45	4 47	7 6	9 39	4 51	7 2	9 33
12	W	4 41	7 11	10 29	4 46	7 7	10 24	4 50	7 3	10 18
13	T	4 40	7 12	11 7	4 44	7 8	11 3	4 49	7 3	10 58
14	F	4 39	7 13	11 40	4 43	7 9	11 36	4 48	7 4	11 32
15	S	4 38	7 14	morn	4 42	7 10	morn	4 47	7 5	morn
16	S	4 37	7 15	0 9	4 42	7 11	0 6	4 46	7 6	0 3
17	M	4 36	7 16	0 35	4 41	7 12	0 34	4 45	7 7	0 32
18	T	4 35	7 17	1 1	4 40	7 13	0 59	4 44	7 8	0 59
19	W	4 34	7 18	1 25	4 39	7 14	1 25	4 44	7 9	1 27
20	T	4 33	7 19	1 50	4 38	7 15	1 56	4 43	7 10	1 54
21	F	4 33	7 20	2 20	4 37	7 16	2 33	4 42	7 11	2 26
22	S	4 32	7 21	2 53	4 37	7 16	2 57	4 42	7 11	3 2
23	S	4 31	7 22	3 35	4 36	7 17	3 40	4 41	7 12	3 46
24	M	4 30	7 23	rises	4 35	7 18	rises	4 40	7 13	rises
25	T	4 29	7 24	9 24	4 34	7 19	9 19	4 40	7 14	9 13
26	W	4 28	7 25	10 15	4 34	7 20	10 10	4 39	7 15	10 5
27	T	4 28	7 26	10 56	4 33	7 21	10 52	4 38	7 15	10 48
28	F	4 27	7 27	11 29	4 33	7 21	11 27	4 38	7 16	11 24
29	S	4 27	7 27	11 57	4 32	7 22	11 56	4 37	7 17	11 55
30	S	4 26	7 28	morn	4 31	7 23	morn	4 37	7 18	morn
31	M	4 26	7 29	0 22	4 31	7 24	0 22	4 37	7 18	0 23

PHASES OF THE MOON.

MOON.	D.	BOSTON. H. M.	N. YORK. H. M.	WASH'N. H. M.	CHA'STON H. M.	CHICAGO. H. M.
3d Quart.	1	9 9 mo.	8 57 mo.	8 45 mo	8 33 mo.	8 3 mo.
New M'n	9	1 32 mo.	1 20 mo.	1 8 mo	0 56 mo.	0 26 mo.
1st Quart	17	5 39 mo.	5 27 mo.	5 15 mo	5 3 mo.	4 33 mo.
Full M'n	24	1 55 mo.	1 43 mo.	1 31 mo	1 19 mo.	0 49 mo.
3d Quart.	30	6 9 ev.	5 57 ev.	5 45 ev.	5 33 ev.	5 3 ev.

AMERICAN AGRICULTURIST.

NEW YORK, MAY, 1880.

Hints for the Work of the Month.

[*The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every month, from the latest experience and observations, by practical men in each department.*]

May is a very busy month, and there is so much work crowded into it that a farmer is in danger of being in a hurry. Every hour of work should be so planned that it will tell most effectually, and this requires considerable thought in order to do the most urgent and important work first, and leave undone those things which may be done almost as well bye and bye. As we sow so do we reap, and as this is the month of sowing, the work now will in great measure determine what the harvest of the year shall be. Keep pushing on, but with a plan.

Labor.—It must be admitted by every one familiar with farm work, that the labor problem is a difficult one, and it may fairly, from its importance, claim the first consultution in deciding upon the plan of operations for the year. The largest possible crops may not return a profit, if the labor in their production has not been well planned. One of the most important advantages obtained from a systematic rotation of crops, consists in the judicious distribution of labor throughout the year so that there may not be a surplus at one time, and a deficiency at another that will require the employing of extra hands at the higest wages.

Corn.—In the Northern and Western States, corn planting will be the leading occupation of the month, but this should not prevent a fair share of attention to other crops that will be needed as a reserve when pastures are getting short, as well as to furnish a variety of feed for winter's use. A soil in high condition, and thoroughly prepared, will give the best promise of a good—paying—crop of Indian Corn. The previous cropping of the soil, will have an influence upon the crop, which is nearly as important as the immediate application of manures. A good clover sod, or a grain, or a root crop, immediately after a fair crop of clover, may be followed by corn with a good prospect of success.

Plowing.—The plowing, and all subsequent preparations of the soil for the seed, should be done in the best possible manner. In turning a sod for corn, any breaks or "balks" in the work will prove an annoyance in after cultivation, and should be avoided. In many localities, especially at the West, the Kentucky Blue Grass (*Poa pratensis*), is a troublesome weed in a corn crop, and it can only be subdued by careful and thorough tillage.

Manures.—Corn, unlike the other cereals, will bear the direct application of manure in liberal quantities. For immediate results, well rotted manures are always best, but that taken unfermented from the barn-yard may be applied to corn. Long manure may be placed under, while short manure may be spread upon the surface and worked into the soil by the harrow and cultivator.

The Time of Planting Corn will of course vary with the locality, but it will be better, as a rule, to secure a thorough preparation of the soil before putting in the seed, even if it somewhat delays the time of planting. Late planted corn, in a warm well pulverized soil will usually take the lead of that which has been struggling from an early start under unfavorable conditions.

Insects.—The Potato Beetle has become such an abundant and troublesome pest that it should be given no quarter—not even from the start. By combined effort in the early portion of the season the "bugs" may be kept in check and thus do very little damage. Paris Green has been so long and successfully employed that it is scarcely necessary to explain its mode of application. Suffice it to say that the liquid method is the one now generally practised, that is, mix the Paris Green with water and sprinkle it upon the vines. A coffee pot may be converted into a sprinkler by providing the spout with an extension and a rose at the end. The only source of danger is in the careless handling, and the poison should be kept and used with a full knowledge of its nature.

Hills or Drills.—On clean land drills may give the best returns, but if weeds are plenty, hills will be better, as they allow of cultivation in two directions.

Seed about which there is any doubt, should be tested before planting to ascertain whether it will grow. Badly kept seed often causes disappointment from its failure to germinate.

Mangels may be sown early this month. Our practice has been to sow in drills 30 inches apart, using six pounds of seed per acre. A liberal supply of seed is required to secure an even stand, and the plants should be thinned by striking a broad hoe directly across the drills so that single plants will stand 12 to 16 inches apart. Root crops are often a failure from defective thinning.

Clover.—An early rolling of clover to settle the roots that have been raised by frost will be especially appropriate after the open winter just passed. Fifty pounds of plaster per acre will often have as good effect as the larger doses of 100 and 200 lbs. that are recommended. Wood ashes on many soils will be found an useful application.

Meadows.—Pick up any stones that may have been raised above the surface from the action of frost. The roller may be used to bring the surface into good shape for the mower. Meadows are frequently injured by the tread of cattle before the ground is fairly settled. The grazing of meadows in spring is at the expense of the hay crop. It is better to keep cattle in the barn until the pastures are ready to furnish them a full ration.

New Fodder Crops.—The *American Agriculturist* has called attention to the new fodder crops as they have appeared. It is very desirable to have a plant that, with no more trouble in cultivation than fodder corn, shall yield 3 to 6 times as much from the same land. The most promising plants for the Northern States are the different varieties of "Durra," called Egyptian and China Corn, Pampas Rice, etc., and the Pearl or Cat-tail Millet. Experiments with these on a moderate scale may be useful, while as

Fodder in the Southern States the Guinea Corn (*Sorghum Halepense*) is esteemed by many, and the Teosinte (*Euchlæana luxurians*) described in January last, promises to be of great value. It is not too late to form an estimate of its value, and should it be desirable, to raise a stock of seed for next year.

Cow Peas, this great fodder crop of the Southern States, which in renovating land there, takes the place of clover, and is worthy of more attention than it has yet had from northern farmers. Though we can not plow under two crops the same season, we can easily get one, and a heavy one, whether for feeding or for turning under. Two bushels of seed to the acre, and plowed under with a shallow furrow, is the usual quantity. Another method practised at the South is to put in the seed, at the last hoeing of a field of corn, and as soon as the corn is off of the ground the pea crop is plowed under.

Jerusalem Artichokes are growing in favor; they are relished by nearly all domestic animals. They may be left in the ground all winter, and when dug in early spring are crisp and fresh and the most acceptable change in the feed. The round, short variety called "Brazilian" is best. The seed it cut the same as potatoes, furrows made 3 feet apart, and the pieces dropped about 12 or 15 inches apart in the furrow and covered with a few inches of earth.

Sorghum—The introduction of the early Amber Cane, has again turned the attention of farmers to raising their own "sweetening," and no doubt many will make a trial of it, who have never grown Sorghum, or even seen it growing. As the Amber is evidently vastly superior to the older varieties, to avoid disappointment, be sure to get seed of the true sort. Seedsmen of good reputation, and the makers of sugar machinery, can supply it.

The Seed, to make sure of its good quality should be tested, by sowing 20 or more seeds in a box of earth kept in a warm place, as the kitchen window, and noting the number that germinate.

Land for Sorghum should be such as would produce a good crop of corn, and prepared in a similar manner. The ground for early Amber is checked off 3½ feet each way, taking care to check it regularly, so that the crop may be easily worked both ways; with these distances, about two pounds of seed to the acre will be required. By "hills," no elevation of the ground is meant, but the term is in common use for the spot, or place for the seed. For Sorghum the ground should be level. About 10 or 12 seeds are to be dropped in a place, and covered.

Early Cultivation is necessary. The time for planting is the same as for corn, or whenever the soil has become sufficiently warm to allow the seed to germinate at once. Observe that the plant, when it first appears, looks so much like grass, that a careless hand might take it for a coarse grass, and treat it as a weed. Success with the crop depends upon giving the plants an advantage over the weeds at the start, and to do this, cultivation should begin as soon as the rows can be seen. Whatever implements are used for the corn crop, may be used to till the Sorghum, but hand-hoeing will be necessary at first. At the second working of the crop, thin out to 5, or at most 6 stalks in a hill. When the plants get to be 3 feet high, the crop is left to itself until it is time for cutting the canes.

Manure.—None of this valuable substance should go to waste. Any manure scattered over the yards should be raked into a heap and secured from exposure to rain, or put at once upon the field.

Sheep.—Sheep should be tagged before turning out to grass. Dry ewes may be fattened, and marketed as soon as possible. Lambs that are for early market, will need the best of care and extra feed. The good shepherd will look well to his flock, and count it every day, so that no animal may get strayed far away and lost. The best way to kill ticks is to dip the lambs shortly after the sheep are sheared in Tobacco Water to which Sulphur is added.

Washing Sheep.—A deduction of about ¼ is made by the wool buyers for all unwashed fleeces, and this is right if the washing is properly done. Take it all in all it is best to wash the sheep, though there may be cases where it is not convenient, expedient, or even safe.

Live Stock.—Keep live stock of all kinds in a thriving condition. The change from hay to grass is critical, often resulting in loss of condition.

Crows.—These birds are in the main the farmer's friends; but at just this time when the corn is *coming up* it is hard to think so. Crows are great lovers of young corn, but for most of the year they feed on insects that are injurious. Drive them off the corn field, but it is not wise to kill them.

Machinery.—See that all haying and harvesting machines and implements are in good condition for service, that they may be ready when wanted. If any portions need replacing, procure these well in advance of the time when they will be needed for use.

Notes on Orchard and Garden Work.

Orchard and Nursery.

Planting should in general be finished before the first of May; but trees that have been carefully heeled-in may be set safely for some time to come.

Grafting can be done now, but great care is necessary. As the bark peels easily at this season it should be cut through with a knife, and the saw made to follow the cut, otherwise the bark may be peeled and a bad wound made. It is not best to remove all the buds from the stock before the graft starts, as there will then be no inducement for the sap to flow upwards. After the union of the graft is made and the buds upon it have started, all those upon the stock below should be removed, in order that the graft may have the full supply of sap.

Insects.—An increase of insect life will come with the warmer growing weather. The eggs of the

Tent Caterpillar will hatch into the "worms" which will begin at once their ravages upon the foliage. Fortunately these destructive caterpillars put up "a sign," without which they might escape notice. They pitch their "tents" at once, and though these are at first small they may be readily seen in the early morning when the dew makes them conspicuous. Take the tent when the whole family is "at home" and crush it under foot. Various devices are suggested for this, but the hand, with or without a glove, is the best. For the higher limbs a pole with a swab attached may be used.

Curculio of the plum stings the fruit while it is quite small. The trees should be jarred in early morning, beginning when they are just passing out of flower, and the sluggish beetles caught on a sheet opened beneath the tree for the purpose. Afterwards those caught on the sheet should be burned.

Borers.—Their presence is known by the sawdust they make. The only effectual method of reaching them is by probing with a wire; cutting the tree with a knife as little as may be found necessary.

Canker Worms.—Bands of stiff paper put around the trunks upon which is smeared a ring of tar or printer's ink, will keep the wingless females from ascending the trees. The bands will need new coats of tar or printer's ink now and then.

Plant Lice, which often crowd upon the growing tips of the branches of cherry and other fruit trees, are removed by syringing with tobacco water.

Thinning Fruit.—The sooner fruit is thinned after it has set, the better it is for the tree, as all growth of fruit costs effort for the tree to make and is therefore exhaustive. No one who desires the choicest fruit will fail to thin an overloaded tree.

Blight is a quick comer which gives no warning. The best that can be done is to cut away the portion "struck," down to the live wood. If the tree is badly affected it is best to remove it entirely.

Seed Beds of fruit and forest trees need close attention to keep the soil loose and the weeds from establishing themselves. The beds, especially of evergreens, will need shelter from the hot sun, which may be provided by a lattice work of laths, or brush may be used, but less convenient in weeding.

Planting in Orchards.—There is a general reluctance to give up the soil of the orchard entirely to the trees. While the orchard is young it is best to cultivate it thoroughly, and hoed crops, like potatoes, roots, etc., can be grown as a present pay for the trouble, but as the trees get older and shade the ground, nothing else but fruit should be expected from the orchard. It is a good practice to pasture hogs in the orchard in clover sown for the purpose, as it is one of the best methods of enriching the soil and at the same time destroying insects.

The Fruit Garden.

Blackberries and Raspberries may still be planted, but as they start early they should have been set before this. Stakes or trellises should be provided to which the canes are to be secured. Novices fail to understand that it is the new canes that grow this year that are to bear the fruit the next season. All suckers are to be treated as weeds unless new plants are desired, when the best ones may be saved.

Currants and Gooseberries.—Cultivate the ground thoroughly and give a good mulch a little later in the season. Watch for the "worms" which come from eggs laid upon the under side of the lower leaves, and use White Hellebore, a tablespoonful of the powder to a pailful of water. It is best to scald the Hellebore with a little hot water before adding it to the water in the pail or watering pot.

Strawberries.—Keep the soil free from weeds and mellow. So soon as the fruit is well set give the bed a mulch, which will keep the berries from the soil. Hand pull any large weeds that may appear. Set out new beds, if plants are to be had.

Grapes.—One healthy, vigorous cane upon a newly set vine is enough. Tie it up securely to a support. Vines are trained so variously that specific directions can not be given. Whatever the method of training it should keep in view and provide for the crop of next year. Generally the fruit-bearing shoots for the present year should be stopped; that is, have their further growth in length prevented, by pinching off the end of the shoot at one, two or three leaves beyond the uppermost cluster of grapes; this should be done very early, as soon as the clusters of buds (often mistaken for young grapes) and the young leaves can be distinctly seen.

Marketing Fruit.—Provide all the appliances of quick and proper marketing before the fruit is ready. So much depends upon the appearance of the fruit at the market that neatness and care in so packing it that it will show at its best, will pay. Caution should be given to the pickers that no over-ripe fruit be put into the basket or crates. If the distance to market is considerable the fruit should be in a less mature state than when the market is but a short distance away. Watch the market.

Kitchen and Market Garden.

Work is apt to come with a rush; there are so many different things to attend to, that unless the work is properly planned, much time will be lost. It happens with many who make a change of residence, that they can not begin gardening until the first of May. These have been obliged to delay the planting of those crops that should be put in so soon as the soil will permit, and will be somewhat behindhand; but with extra effort, and that at once, they may be able to get abreast with the season with most of the vegetables of the garden.

Asparagus should be cut with a strong, round-pointed knife, and with care that the neighboring younger shoots or buds may not be injured. Cut the bed clean, leaving no small shoots to grow now.

Beans.—Plant the bush sorts in drills 18 inches apart, as soon as there is no danger of frost. The Limas are not to go in until the cold rains are over and the ground well warmed. Set the poles 4 feet apart, and afterwards plant four or five beans to each pole, thrusting the seeds into the soil with the eye downward. See that the poles are firmly set.

Beets.—Thin the early sown sorts as soon as large enough; the thinnings may be used for "greens." Sow every fortnight until July, and in drills 15 inches apart. Put in Long Blood for winter use.

Cabbage.—The hoe and cultivator should keep all weeds from the early crop. Sow the seed in open ground for plants for the late crop.

Carrots.—Sow the Early Horn for early use; for the winter supply wait until the ground is warm.

Corn.—Plant so soon as the frosts are past, and continue to do so at intervals of a week or ten days, to have a supply of this excellent vegetable through the season. "Triumph" is one of the best sorts.

Cucumbers.—Plants that have been started in frames should go out, but protect them if cold nights come. Seed for later crop may be sown in the garden so soon as the ground is warm and dry.

Egg Plants.—Nothing is gained by setting plants in open ground until warm weather sets in. Push them with a good supply of rich manure. Liquid manure may be used, and with very good results.

Lettuce.—Cultivate the early plants; set out new plants from hot-bed for succession. Seed may now be sown in the open ground for the late crop.

Martynias.—Sow seed in hot-bed and set the plants out so scon as well started, or sow later in the open ground. Set about 3 feet each way.

Onions.—Clean culture is necessary with this crop. The soil needs frequent stirring, and hand weeding will be required in the rows.

Melons and Squashes require much the same treatment as Cucumbers. They are of the tender group of vegetables, and require a warm, dry soil at time of planting. Allow an abundance of seed to each hill.

Parsley.—Transplant from hot-bed for early, and sow seed in open ground for late crop.

Peas.—See previous month's Notes, and "Peas in Plenty," March, p. 105. Sow a succession for constant table use. The large sorts will need brush.

Peppers.—Set out plants when the weather has become settled. A few should be in every garden.

Potatoes.—Keep clean of weeds by frequent hoeing and stirring the soil. Use Paris Green or London Purple for the "bugs" as soon as they appear.

Radishes will need to be sown every week or so for a succession. Dust with plaster for insects.

Salsify.—Sow this month and keep clear of weeds.

Spinach.—Keep the first crop clear of weeds, and sow every week or 10 days during the month.

Tomatoes should be put in hills 4 feet each way so soon as all danger of frosts is past. Provide some support for the plants before they fall over. A little straw or brush to keep the fruit from the soil may be used if the plants are not supported.

Turnips.—The early sowings should be kept clear of weeds, and sprinkled with lime or plaster if the Black Fly appears. Sow seed for a late crop.

Tools of all sorts required in the garden should always be in good order and at hand; this last is important, therefore have a place for every tool, and when not in use let it always be found there.

Flower Garden and Lawn.

Lawn.—A light top-dressing of some fine fertilizer should be applied. For this purpose, guano, ashes, ground bone, and nitrate of soda, are all good. Either of them may be used, at the rate of 200 pounds per acre. The best time to apply the soluble manures, like guano, and nitrate of soda, is just before a rain. If there are thin spots, sow grass seed upon them, and rake in. Lawns that are well established, should be mowed once a week, and the cutting left to protect the roots from the sun. Large weeds are best removed by hand-pulling, aided by an old chisel to secure the roots.

Climbers are especially useful for decorating, and furnishing shade for verandas, and making screens for hiding unsightly places. Of the woody sorts, the Wistaria, Akebia, Clematis, Loniceras, etc., are among the best. If these can not be waited for, sow annuals, as Cypress Vine, Canary Bird Flower, Morning Glories, etc., or plant Maderia Vines.

Annuals may be sown, and care should be taken to properly preserve names by using neat labels at time of planting, especially with new varieties.

Perennials should have been divided last month, as many start early. Old beds should be kept free from weeds, and the soil loose, by frequent hoeing.

Bulbs.—Lilies, and Gladioluses, may be planted early, and if a part of the Gladiolus bulbs be kept out for a month, a longer succession of flowers may be had; they should have stakes as a general thing. Cannas, which pass for bulbs, do better if not planted until the soil is thoroughly warmed.

Wild Flowers.—Those who take an interest in cultivated flowers, can usually find a place in the garden for a collection of the prettiest of the wild flowers, and find much enjoyment in noting their time of appearance, etc. A "rock-work" is a pleasing feature in its place, which is not on a lawn.

Castor Oil Plants are so tropical in their nature, that they make a fine show, and a few of them should be introduced wherever the garden is large enough. They do best started in a hot-bed and afterwards transplanted to the warm open ground.

Greenhouse and Window Plants.

The potted plants that are to stand out of doors, should have a partly shaded place, and be provided with a thick layer of coal ashes, to prevent worms from entering the pots from below. The plants in the greenhouse will need shade, and this can be produced by coating the glass with white-wash. Muslin screens will answer in small houses..... Water should be freely used, and the houses provided with an abundance of fresh air.... Fuchsias will serve to decorate verandas and like places, otherwise they had best remain in the greenhouse. ....Hanging Baskets will need frequent attention, and should be plunged into a tub of water, and well soaked at least twice a week.....It is safer to keep all choice tropical plants in the greenhouse, than to run any risk with them out of doors..... Clear the house of all insects, and make any repairs necessary, while most of the plants are out.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our record kept daily during the year, show at a glance the transactions *for the month ending April 9th*, 1880, and for the corresponding period last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
23 d's *this* m'th	374,000	1,556,000	2,579,000	69,000	272,000	935,000
24 d's *last* m'th	368,000	1,251,000	2,137,000	41,000	409,000	896,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
23 d's *this* m'th	338,000	23,571,000*	6,104,000*	181,000	383,000	1,918,000*
24 d's *last* m'th	305,000	24,100,000*	4,118,000*	285,000	194,000	1,314,000*

* Including sales for forward delivery.

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
23 days 1880	374,000	1,156,000	2,579,000	69,000	272,000	935,000
26 days 1879	413,000	3,457,000	2,916,000	314,000	207,000	811,000
SALES.	*Flour.*	*Wheat.*	*Corn*	*Rye.*	*Barley.*	*Oats.*
23 days 1880	338,000	23,571,000	6,101,000	181,000	383,000	1,918,000
26 days 1879	395,000	8,431,000	5,687,000	439,000	291,000	1,213,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush
Apr. 6, 1880	3,430,747	894,236	66,497	230,967	368,481	135,996
Apr. 8, 1879	2,629,068	804,784	403,238	432,832	650,308	85,577
Apr. 10, 1878	1,370,081	541,648	106,375	396,861	857,273	255,424

4. *Exports from New York, Jan. 1 to April 9.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1880	761,000	9,150,000	7,810,000	521,000	196,000	43,000	98,000
1879	824,400	10,708,000	7,694,500	850,700	68,700	85,200	142,850
1878	770,100	12,898,746	5,232,029	974,966	1,153,912	84,564	145,351
1877	373,057	2,873,510	5,678,140	851,280	121,229	33,125	117,060
1876	569,514	4,994,177	3,668,928	43,320	——	63,894	258,251

A close Money market, continued activity in Stocks, Produce, and Merchandise, and more or less frequent and wide fluctuations in values received have been the notable features of business since our last review....A buoyant market has been noted in Real Estate, which has been in much more favor with buyers for investment purposes....Dry Goods, Boots, and Shoes, Hardware, and Leather have been in fair demand, and quoted generally firm. Hides, Skins, and Rice have attracted more attention at stronger rates. Naval Stores, Drugs, and Dyes, Fish, Fruit, Hemp, Sugars, Coffee, Teas, and Molasses have been in less urgent request, and have been somewhat unsettled, though leaving off without important changes....A brisk movement has been again reported in Cotton, the bulk of the dealings having been in the option line, but at reduced quotations....Wool has been ruling in favor of holders, who have been reserved in their offerings of stock, especially of domestic product, while the inquiry for supplies has been good....Hops have recently met with a rather more urgent call, chiefly for home trade account, and the better qualities have been held with more confidence, as the offerings have been materially reduced... Hay and Straw have been in fair demand at about former figures....Seeds have been much depressed and quite irregular, on a very moderate inquiry, even from home trade sources....Metals have been much less sought after, and have been quoted generally lower....Provisions have been moderately active, but variable, closing, as a rule, weaker....More liberal receipts and offerings, increased urgency on the part of holders to realize, rather less satisfactory advices by Cable, and a sharp rise in ocean freights worked decidedly against nearly all kinds of Breadstuffs, which declined seriously on an unsettled and sensitive market—Flour, Wheat, and Corn showing most depression and irregularity—on free dealings in Wheat and Corn for prompt and forward delivery—in Wheat, chiefly in the way of options, and in Corn, mainly for prompt delivery. A moderate movement has been reported in Flour and Rye, at current quotations. Oats have been quite brisk, and recently buoyant in price—due partly to the requirements of speculative operators to provide for maturing contracts—but closed in favor of buyers. Barley has been exceptionably firm, with the better qualities in comparatively light supply and wanted. The recent export clearances of Grain from the Atlantic seaboard ports have been of unusual magnitude as well of Wheat, as Corn, the shipments of which latter, within the past week, reached over 3½ million bushels. Favorable weather, and encouraging crop reports have been adverse in their bearing on values in the European as well as in the domestic markets. The stocks of grain in store in New York harbor are steadily diminishing. The visible supplies of Wheat—embracing the hoards at lake ports, in transit, and on the seaboard—at latest dates, embraced about 24,227,000 bushels;—of Corn, 16,541,000 bushels; of Rye, 680,500 bushels; of Barley, 2,228,000 bushels, and of Oats, 2,944,000 bushels, against on January 31, an aggregate of 30,100,000 bushels Wheat, 18,100,000 bushels Corn, 979,000 bushels Rye, 4,155,000 bushels Barley, and 3,080,000 bushels Oats. Ocean grain freights were advanced materially on an active demand from the grain interest, but closed easier and comparatively tame, including by steam to Liverpool 6½@7½*d.* per bushel; to Bristol, by steam, to 8*d.* per bushel; to Antwerp by steam, to 8*d.* per bushel, and by sail to Cork, for orders for vessels of average carrying capacity—say 3,000 to 4,000 qrs. —4@5*s.* having been as high as 5*s.* 4½*d.*@5*s.* 6*d.* per quarter of 480 lbs.

CURRENT WHOLESALE PRICES.

	Mar. 13.		Apr. 13.	
FLOUR—Super to Extra State	$4 65 @	5 75	$3 90 @	5 40
" Super to Extra South'n.	4 65 @	8 25	3 90 @	8 00
" Extra Genesee	5 75 @	7 00	5 40 @	6 75
" Superfine Western	4 65 @	5 30	3 90 @	4 25
" Extra Western	5 30 @	9 00	4 85 @	8 25
" " Minnesota	5 50 @	9 00	4 85 @	8 50
BUCKWHEAT FLOUR, ₱ 100 lbs	1 50 @	1 75	Nominal.	
BUCKWHEAT, per bush	55 @	—	Nominal.	
RYE FLOUR, Superfine	4 70 @	5 15	4 50 @	5 10
CORN-MEAL	2 50 @	3 30	2 50 @	3 20
CORN-FLOUR, per bbl	3 75 @	4 50	3 75 @	4 25
OAT MEAL, ₱ bbl	5 00 @	7 00	4 50 @	6 75
WHEAT—All kinds of White	1 35 @	1 45	1 30 @	1 36½
" Red and Amber	1 15 @	1 46	1 15 @	1 40
" Spring	1 20 @	1 45	1 10 @	1 32
CORN—Yellow	60 @	68	55 @	57
" White	61 @	68	56 @	58
" Mixed	59 @	65	53½@	55
OATS	46 @	54	41 @	43
RYE	93 @	97½	87 @	91
BARLEY	55 @	1 05	55 @	1 06
HAY—Bale, ₱ 100 lbs	65 @	95	65 @	90
STRAW, ₱ 100 lbs	45 @	1 00	45 @	1 00
COTTON—Middlings, ₱ lb	13¾@	13¾	12¾@	13¾
HOPS—Crop of 1879, ₱ lb	27 @	38	27 @	40
" " 1878, ₱ lb	7 @	20	7 @	18
" olds, ₱ lb	4 @	12	4 @	12
FEATHERS—Live Geese, ₱ lb	40 @	55	40 @	55
SEED—Clover, West. & St. ₱ lb	7½@	10½	5½@	7¾
" Timothy, ₱ bushel	2 90 @	3 05	2 75 @	3 00
" Flax, ₱ bushel	1 75 @	1 80	1 75 @	1 80
TOBACCO, Kentucky, &c., ₱ lb	3½@	14½	3 @	14
" Seed Leaf, ₱ lb	— @	—	6 @	40
WOOL—Domestic Fleece, ₱ lb	32 @	58	32 @	60
" Domestic, pulled, ₱ lb	19 @	56	20 @	57
" California	17 @	44	18 @	45
TALLOW, ₱ lb	6¾@	6¼	6¾@	6¼
OIL-CAKE—₱ ton	31 50 @	32 25	29 00 @	30 25
PORK—Mess, ₱ barrel	11 75 @	12 50	11 50 @	11 65
" Extra Prime, ₱ barrel	10 00 @	10 50	— @	—
BEEF—Extra mess	11 00 @	12 00	11 00 @	12 00
LARD, in trcs. & bbls, ₱ 100 lb	7 65 @	8 05	7 50 @	7 90
BUTTER—State, ₱ lb	18 @	37	20 @	33
" Western, poor to f'cy, lb	14 @	37	11 @	34
CHEESE	11 @	14½	9 @	14½
EGGS—Fresh, ₱ dozen	11 @	14½	9½@	12½
POULTRY—Fowls, ₱ lb	6 @	13	5 @	13
" Chickens, ₱ lb	6 @	20	7 @	22
" Roosters, ₱ lb	5 @	6	4 @	5
Capons, ₱ lb	15 @	21	16 @	22
Turkeys—₱ lb	8 @	14	10 @	15
Geese, ₱ pair	1 00 @	1 75	75 @	1 50
Geese, ₱ lb	8 @	12	10 @	12
Ducks, ₱ pair	50 @	80	50 @	80
" ₱ lb	10 @	15	10 @	16
DUCKS, Wild, ₱ pair	20 @	2 00	25 @	2 00
PIGEONS, ₱ dozen	40 @	3 25	1 05 @	3 75
ENGLISH SNIPE, ₱ dozen	4 00 @	4 50	1 00 @	1 25
APPLES, ₱ barrel	2 25 @	3 25	2 00 @	4 50
STRAWBERRIES, new So., ₱ qt.	20 @	50	15 @	35
POTATOES, new, per bbl	5 50 @	6 00	4 00 @	8 00
" ₱ bbl	1 00 @	2 00	1 00 @	2 00
" Sweet, ₱ bbl	2 75 @	3 00	3 00 @	3 50
TOMATOES, new, per box	50 @	1 00	50 @	1 00
TURNIPS ₱ bbl	75 @	1 00	62 @	75
BEANS—₱ bushel	1 35 @	1 80	1 30 @	2 00
PEAS—Canada, in bond, ₱ bu	— @	85	— @	—
" new, green, ₱ bag	1 75 @	1 80	— @	1 80
" new, South'n, per crate	1 00 @	3 00	1 50 @	2 60
STRING BEANS, nw, Flor., p.c	— @	—	2 00 @	3 00
CARROTS, ₱ bbl	75 @	1 25	1 00 @	1 50
BEETS, ₱ 100 bunches	1 00 @	1 25	1 25 @	1 75
" new Bermuda, per crate	— @	1 50	— @	1 50
CABBAGES—₱ 100	4 00 @	9 00	5 00 @	10 00
" new, ₱ bbl	— @	—	3 00 @	3 50
ONIONS—₱ bbl	2 75 @	4 50	2 75 @	6 00
CRANBERRIES, per crate	7 00 @	10 00	3 50 @	4 00
SQUASH, ₱ bbl	1 75 @	2 75	1 50 @	2 75
CELERY, per dozen bunches	2 00 @	3 00	— @	—
SPINACH, ₱ bbl	1 25 @	2 50	1 00 @	2 50
ASPARAGUS, new, ₱ doz. bun	— @	—	5 00 @	9 00
RADISHES, new ₱ 100 bun	— @	—	50 @	1 25
CUCUMBERS, ₱ 100	— @	—	2 00 @	6 00

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Mar. 15	14,234	234	1,429	29,483	29,780
Mar. 22	12,997	207	1,898	25,572	32,454
Mar. 29	11,270	137	1,727	25,119	32,086
Apr. 5	11,865	146	2,741	25,760	32,053
Total for 4 Weeks	50,366	724	7,895	105,935	126,373
do. *for prev.* 4 Weeks	41,770	831	8,825	93,477	124,768

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	12,591	181	1,974	26,484	31,593
do. do. *last Month*	10,442	208	956	23,369	31,197
do. do. *prev's Month*	11,913	197	1,059	32,300	34,229

Prices for beeves the past four weeks were as follows:

WEEK ENDING	*Range.*	*Larger Sales.*	*Aver.*
Mar. 15	8 @11¼c.	9¼@10 c.	9¼c.
Mar. 22	7 @11 c.	9 @10 c.	9¼c.
Mar. 29	7½@11¼c.	9 @10 c.	9½c.
Apr. 5	7 @11 c.	8¾@ 9¾c.	9¼c.

Beeves.—The average receipts for the past four weeks, have been a considerable above those of previous months. During the first week, there was a good home demand, with a fair foreign call, thus making the market active, and prices good. The second week was remarkably dull, in marked contrast with the one preceding it, but the prices have held good up to the time of going to press. The first week in April found the markets too liberally supplied, and much money has been lost by Shippers. Oxen sold as low as 3½c. live weight, while Choice and Extra Steers to dress 57, sold at 10¼ to 11c. ....**Milch Cows.**—The demand rather moderate for fresh milkers, the market remaining quiet and about the same for the four weeks. From $30 to $55, represents most of the sales, the latter being choice stock for family use.....**Calves.**—The supply has been liberal, demand very moderate, and the market dull. There was a falling off at the close of the month. Mixed lots sold for 4@4½c., and common to prime veals, at 4½@7c.....**Sheep and Lambs.**—The month opened with good prices and considerable demand, which was soon answered by a full supply, when the market fell, and remained so for a week, with little rise for the last fortnight. Common lambs felt the decline more than sheep. The sheep sold in most part at from 5⅝ to 7c.; extra wethers at 7¼c., and a small lot of selected sheep at 7⅝c. ....**Hogs.**—The month opened steady, and closed moderately firm, with ¼c. advance. Common and Prime Hogs, quoted at $4.75@$5.12—Average for the month about $4.60.

The Horse Market.—Last year was the best in the Horse Market for the past five years, but the indications are that the one just opened, will be better than the last. Common work horses are selling at $80@$150 ₱ head.—Street car horses are bringing $110@$135—Those animals fitted for carriage horses, have brought as high as $250, and heavy cart and dray horses about the same.

Prices of Feed.

Cotton-seed meal	per ton.	$30.00
Linseed-cake meal	"	37.50
Middlings	"	24.00
Bran	"	23.00
Corn-meal	"	23.00

Prices of Fertilizers.

Nitrate of Potash (95 per cent.), per lb.	9 @9¼c.
Sulphate of Potash (potash 44 per cent) per lb.	3¾@4 c.
do. do. (potash 27½ per cent) per lb.	1¾@1¾c.
German Potash Salts (potash 12 to 15 p.c.) p. ton	$15.00@18.00
Muriate of Potash (potash 50 per cent), per lb.	2 @2¼c.
Nitrate of Soda, per lb.	5@5¼c.
Sulphate of Ammonia (25 per cent.), per lb.	4¼c.@4½c.
Dried Blood (ammonia 13 per cent) per ton	$40.00@45.00
No. 1. Peruv. Guano 10 p. ct. ammonia, standard, ₱ ton	$55.00
do. do. Lobos, do. do. do.	46.00
do. do. guaranteed, ₱ ton, cargo K	36.00
Soluble Pacific Guano, ₱ ton	45.00
Excelsior Fertilizer Works, Fine Ground Raw Bone,	55.00
Mapes' Complete Manure (clay soils) per 1,000 lbs.	28.50
do. do. do. (light soils) per 1,000 lbs.	25.50
do. do. do. "A" Brand, (wheat) ₱ 1,000 lbs.	30.00
do. Corn Manure, per ton	49.00
do. Beet do. do.	49.00
do. Cabbage do. do.	47.50
do. Tobacco do. do.	52.00
do. Fruit and Vine Manure, per ton	35.00
Stockbridge Rye Manure, do.	45.00
" Wheat do. do.	45.00
" Seeding Down Manure, do.	40.00
Bowker's Wheat Phosphate, per ton.	40.00
Baugh's Raw Bone Phosphate, per ton	33.00
Baugh's Manure for Tobacco and Grain, per ton	45.00
Walton, Wilann & Co.'s Raw Bone Phosphate	40.00
Gypsum, Nova Scotia, ground, per ton	7.50

DON'T FORGET THE PREMIUMS.

2

Months More.

Two Months Yet Remain, May and June, during which *any* person who wishes can obtain one or more of the useful and valuable articles offered in our Premium List (of which a copy will be sent free to any applicant not having one). They are easily secured. This has already been done by more than **25,000** persons, who during years past have tried with success the raising of Clubs of Subscribers for our paper, and availed themselves of the liberal offers of Premiums made by the Publishers.

We invite **all** our Subscribers to take hold of this work and secure a Premium while the offer is open. Specimen copies of English or German editions will be sent to any wishing to show them for this purpose.

Premium Clubs already started can be filled up. And there is plenty of time to start **new Clubs** and complete them.

Spring Work is opening, and multitudes will now feel the need of the help, the hints and suggestions given by practical men in the pages of the *American Agriculturist*. They only need some one to present the paper to them and take their Subscriptions. The Premiums will well *pay* those who do this for their trouble.

containing a great variety of Items, inc'uding many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

What This Number Contains:

Most of our readers are too busy, just now, to at once go through the hundred and fifty or more articles and items of this paper—each one doubtless worth reading. All will first turn to

Hints for the Work of the Month, on pages 172-3-4, as suggestions from practical men are scattered through those pages. Bee men will look at page 178.

Corn, our great national crop, comes to the front this month. Prof. Atwater's results of experiments, and the value of corn as a renovating crop, pages 180, 181, will be carefully studied, with profit. See "Basket Item" on Corn, page 178.

Dairy Matters are treated at length, and variously, on pages 184-5. A famous cow is described on page 183.

A Cottage or House for the Country, costing $1,800, on page 182, will interest many, especially as the detailed specifications are given.

Humbugs of various "species" have their "Gallery" on pages 176-7.

The Hints and Helps to Farmers under several heads, on pages 186-7-8-9, can scarcely fail to supply some useful hint, in one way or another, to every reader

Fences and Fencing, on pages 179-80, give a few readers' experiences in their own words.

"The Department of Agriculture" will scarcely enjoy the exposé, on page 190, but many of our readers will.

Some Newer Grapes, pages 190-1, and the Great Grape Enemy, pages 192-3, will be found very interesting by many readers.

Housekeepers are not forgotten, as witness pages 194-5.

The Boys and Girls will find things useful, things puzzling, etc., on page 196-7-8.

The "Basket" abounds in condensed items in two places, on pages 175-6-7-8-9, and over on pages 203-4-5.

Where to Get Things Wanted.—Many *thousands* of letters come to the Editors every year (some with and some without "return postage"), asking where they can obtain from trustworthy parties, implements, animals, poultry, seeds, plants, fertilizers, and a great variety of other things, all of which questions we try to answer when we can. But nine out of ten of these letters, and much valuable time of both writers and respondents, would be saved, if the inquirers would take the little trouble required to just look through the advertising columns, where usually, in one number or another, several parties announce the very things asked about. We try to keep out all parties not trustworthy. If any mistake occurs, after all possible care, we can only acknowledge to having been deceived, *for we do not admit any advertisers whom we would not ourselves patronize when wanting the things they offer.* (The Editors have the "veto power" over any and every advertisement proposed for these columns.) It will always pay to read through the business columns to see what is offered and by whom, and useful hints are often derived from reading what others say and how they say it. New ideas are thus started up in one's mind.—When corresponding with any of our advertisers, or sending for catalogues, etc., it is well to state that you are a reader of *this* Journal. They will know what *we* expect, and what *you* expect of them as to prompt and fair treatment.

The Sugar Beet, by Lewis S. Ware, C. E. M. E., etc., Philadelphia, Henry Carey Baird & Co. Just as we go to press the work with the above title comes to our notice. At no former time has the Beet Sugar interest in this country been so full of promise. It appears as if the period of costly failures had passed. The few establishments now at work though small are successful, which is more than could have been said at any former time. There is probably nothing more certain in the future of American agriculture, than that it shall supply the country with sugar. Whether this is to come from the Beet, from Indian Corn or from some variety of Sorghum already or yet to be produced, we do not undertake to say, or whether the consummation will take place in 10, 50 or 100 years, matters not: it is bound to come—and the sooner the better for both the country and the farmers. Hence we look with special interest upon any thing that tends to increase the knowledge of sugar-yielding plants, a purpose which this work is admirably calculated to serve. Though we have had no time to read the work, we can see that it is marked throughout by thoroughness and competent knowledge. It is not a work upon sugar making, but upon the Beet itself in all its relations; its composition, varieties, culture, enemies, harvesting, storing, the uses of the root itself and the waste products from the factory, the pulp, for feeding. In fact, all that can be said about the beet that the grower need know is given here, and illustrated liberally and handsomely. It is not a reproduction of a foreign work—though foreign authorities are quoted when desirable—but a large share of the matter is from the author's own experience. Sent from this office, post paid for $4.00.

Keeping one Cow—The Prize Essay.—On account of the large number of essays (over **70**) and their fullness, it has been found impossible for the judges to make a report in time to announce the prizes this month, and we are obliged to wait until our next issue, in which we expect to print the one awarded the first premium. This will doubtless alone be worth more than a whole year's subscription to the hundred of thousands of people who keep one or more cows.

Feeding for Milk When Dry.—A cow should be as well fed while dry as when giving milk. She should now increase in flesh, so that she may be able to give a greater flow of milk when milking time comes. To feed a dry cow the poor hay, or even think that straw is good enough, is poor policy, and the loss will show itself in the milk pail. Feed the cows well all the time.

Oleomargarine—What it is and What it is Not.—When Oleomargarine was first manufactured we described the process, but that was some years ago. Recent inquiries make it necessary to say something more about it. Prepared beef suet, the membranes, etc., removed, is churned with milk to give it the flavor of butter, is colored and salted—that is what it is—beef-fat prepared to look and taste like butter. It has not the mechanical texture of or the chemical composition of, and is in no respect, butter. So far as it is sold as butter it is a miserable fraud. The makers claim that it is as good as any butter and much better than a large share of the butter sold. That is a point with which we have nothing to do. It is *not* butter, as that is a product of the cow, obtained through the medium of the milk, and contains several constituents that the fat of the cow does not and which can not be added. Several of the States have passed laws directing that all the packages of Oleomargarine shall be distinctly marked with the word in letters of a given size. This is well, so far as it goes, but does not prevent the retailer from serving it as butter. As oleomargarine can be made at a much less cost than butter can be produced, the sale of it as butter is injurious to the dairy interest, and every dairyman and every farmer is interested in preventing its sale as butter, and to this end a petition is being circulated for signatures asking Congress by a general law to place restrictions upon its manufacture and sale. But the capitalists who have money invested in the manufacture of Oleomargarine are not idle. They have invited the Committee on Agriculture of Congress to visit their factory; they have also invited a number of prominent chemists to do the same; their guests have been steamboated and dined and we suppose wined, all after the approved fashion. We do not know what the effect will be upon the Congressmen, but we are very sure that the chemists will say, as they might have said before—"Gentlemen, your stuff is not injurious, it is as healthy as beef-fat need be, we see no objections if people wish beef-fat with their bread, why they should not buy yours, but it is not butter and no amount of steamboat or banquet can make us say that it is."—We see no reason why colored and salted beef-fat or colored and salted hog's lard, or purified and salted palm oil should not be eaten if one's taste runs that way, but they should not be sold as butter or given out to one who asks for butter, and the penalty to one who does it should be most severe. We notice of late a disposition to change the name of the stuff to Butterine—no, gentlemen! you chose your own name at the beginning. Oleomargarine is quite a pretty name and as distinct from *butter* as the stuff itself, and we do not wish a name that may lead to the confounding of two very distinct articles. Butter can stand on its own merits, with its own name; let your stuff do the same, and may there may be laws enough to make you do it.

Silica in Plants.—Silica (or sand) has long been considered an essential constituent of plants, especially the cereals like wheat and oats, in which it was held indispensable to give the straw the proper strength to hold up the heavy, well filled heads. The conclusions stated in the Annual Report of the Connecticut Agricultural Experimental Station of 1879, show that the value and importance of Silica in plant nutrition, have been greatly overestimated. The Report says: "1. It has been conclusively shown that the strength of straw does not depend upon the Silica in it, but on the vegetable substance itself. Rapid growth produces, in presence of abundant Silica, a comparatively loose and weak cell tissue. Slow growth, on the other hand, yields in practically total absence of Silica, firm and close textured stems. Again, no fertilizing experiments in which soluble Silica has been supplied, have shown any benefit from the Silica. Finally, there is no element so abundant in all soils, and none whose access to crops is so impossible to avoid. 2. Numerous most careful trials on the growth of plants under circumstances where Silica has not and could not, be supplied by them, except in most minute quantities, have demonstrated beyond all question that Silica is not necessary to the nutrition or complete development of agricultural plants."

Chicken Cholera.—The Georgia State Agricultural Society, in answer to the offer of a reward for the best remedy for chicken cholera, received the following, which is of course claimed to be a *sure cure*. "Gather one bushel of Smart-weed and put it into a large-sized kettle, adding 10 gallons of water. Boil down to three gallons and mix this liquor with meal in proportion of one pint to three gallons of meal, and feed the same to 200 chickens twice a day until disease disappears and then give no more for a week. To keep the disease away give every other day." We give the above for what it is worth, and have no doubt it is quite as valuable as any of the secret remedies now offered. The one who proposes the remedy claims that previous to using this decoction he lost 800 chickens, but none since its use, which is as much entitled to consideration as the claim of secret stuffs to be *perfect cures*. We take it that by "Smartweed," one of the acrid *Polygonums*, is intended. Two species of *Polygonum*, *P. Hydropiper* and *P. acre*, are found in moist ground in nearly all parts of the country. These are known as "Smart-weed," "Water-Pepper," and "Biting Knot-weed." They have a very acrid juice, which irritates and even blisters the skin if applied where that is tender, and has a most pungent, biting taste. Some species resembling these are without this property.

Winter in Dakota.—A friend, who is stationed at a post in the Northwestern portion of the Territory, writes in a private letter: "We have had a rigorous winter, lasting from the latter part of October until past the middle of March. For weeks at a time the thermometer never got above zero, but it did one day reach to 51 *below*. Of course the mercurial thermometer never told us that, it was resting about that time. [Referring to the fact that mercury freezes at about 39°—ED]. For six weeks we were without mails on account of the heavy snows that completely blockaded the roads. We had storm after storm, such as you in the East never dreamed of, and which pen cannot paint. Yet the weather is glorious! A clear, bracing air that makes it a pleasure to live in it. Zero weather we consider warm, and hardly worth while to put on wraps in going short distances. Of course this refers to quiet weather. A wind alters the case materially. Most of us wore buckskin pantaloons after the manner of the Indians, buffalo overcoats, fur caps and gloves or fur mittens. In very cold weather boots and arctics were unwearable, and boots made of buffalo robe with the fur inside were the only articles for possibly keeping the feet warm. I must, on second thoughts, make an exception, as German socks and *loose* arctics could be worn. I adopted the former, however, as did the majority. At present writing (March 28th), the Missouri river is still stationary. Ice four feet thick and as clear as a crystal, though in summer the Missouri is the muddiest river, without exception, I ever saw."—Ice four feet thick! and in the East an impending ice famine!

Balky Horses.—Among the suggestions said to be published by some Anti-cruelty to Animals Society, are these: If the horse when he balks, can have his attention diverted there is usually no trouble in starting him. This may be done in various ways of which the following are a few that have been employed: Take the horse out of the shafts and turn him around several times quite rapidly. This will make him entirely dizzy and lead him to forget that he does not wish to draw the load. A stout twine twisted around the fore-leg has been used as a remedy with good results. A string tied around the ear has the same effect. We have seen horses of the balkiest sort started in a moment by putting a lump of earth into their mouths. Even a piece of sugar or a handful of fresh grass will so divert the attention of a balker that he will often start off without trouble. Some mild treatment like these that set the animal to thinking of something foreign to his work is vastly better than any amount of whipping, and is much easier of application.

Sundry Humbugs.

Every now and then a letter shows that all do not understand the rules that govern the conduct of these columns. It is a mere waste of paper and postage to write a request to "denounce so and so in your Humbug Column," as some thoughtless persons occasionally do. Our older readers are aware that these columns are not and cannot be made the medium through which to redress private grievances. One to merit a place here must be an enemy to the public welfare, not merely suspected of wrong doing, but the proofs against him must be such as would convince any fair minded man that the good of the community requires his exposure. There are—and more's the pity—quite as many of this kind as we care to occupy ourselves with. The publisher of a country newspaper writes: "Dear Sir, Please denounce X. X. X., of Cincinnati, O.," who advertised some gimcrack in his paper and did not pay. If we were to set up as denouncers of all who do not pay for advertising we should be obliged to issue a large supplement. We find that requests like the above, as in this case, generally end with

"PLEASE OMIT MY NAME."

This person expects us, upon his bare request to give one we never before heard of the bad eminence of a place here, and is even unwilling to appear as accuser. No we thank you. We are not in that business just now.

With the spring, when snakes and other creeping things come out of their holes, those sharpers appear who

HAVE DESIGNS UPON FARMERS.

Where these fellows come from, and where they stay when not going about the farming districts is a mystery—but soon after the skunk cabbage blossoms these are sure to appear, whether in person or through advertisements, offering one thing or another, but all having the same aim—the farmer's pocket. Sometimes it is

WONDERFUL SEEDS AND PLANTS.

It is safe to assume that any seed or plant offered by traveling venders or agents as something new or of a kind not to be had elsewhere, is a fraud. Valuable new things are not introduced in this manner. Tennessee is a wonderful State in many respects, and the seeds that are advertised by parties in that State are—to say the least, remarkable; so much so that we advise our readers to let some one else try them ...Beware of those chaps who come about with "rights" for sale, or some implement or affair for which they would make you "sole agent" for the township. A farmer who properly attends to his farm has no time to bother with selling somebody's Mowing Machine Knife Sharpeners or anybody's Patent Spring Bed. Besides this, nearly all

THE SWINDLES UPON FARMERS

through the medium of notes fraudulently obtained, that have come to our knowledge, would have been avoided, had the farmers refused to have anything to do with matters outside of their proper calling. Being tempted by the idea of making money through the sale of articles of which they knew nothing, they have had to pay notes which they signed while thinking that they put their names to an order for goods. So generally are they swindled, that the farmer's only safety is in refusing to buy any machine, implement, or other article, of any traveling agent whatever. There is nothing needed on the farm that may not be bought of dealers, who have a fixed habitation and can be found when wanted.

THE TREMONT SPOON CO.

of Boston has come to grief. We noticed its offer last month, and now have to record the fact that the Postmaster General, being convinced that they were using the mails for fraudulent purposes, has issued orders to the Boston Postmaster to deliver no more letters to the men of spoons. Hardhearted Postmaster General! There are other concerns that need looking after, including a Gold Ring Shop in Philadelphia....The sellers of recipes for making

ILLUMINATING OILS

appear to be active, especially in Nebraska and others of the newer States, and the many letters of inquiry make it necessary to repeat our caution against them. They claim that their recipe will allow an illuminating oil to be made at less than half the price of kerosene, and one that will not explode. As a proof of its safety the chaps have a sample of the oil which they show will extinguish a burning match. We have seen none of these recipes that did not direct the use of Benzine, which is mixed with various useless articles as a blind, and in some cases it is asserted that these remove its dangerous qualities. Benzine is very cheap, but it is very dangerous, and *nothing whatever* can be mixed with it that will make it safe. It does not of *itself* explode, but its vapor mixed with air will—and murderously. The matter is of such serious importance as to warrant our repeated warnings, for it is not too much to say that it is

A MATTER OF LIFE AND DEATH.

Let no considerations of cheapness; let no assurance that any admixture will alter its nature; let no claim that anybody's lamp or any patent burner will make it safe, induce you to have, keep, and much less burn Benzine. Benzine is benzine and is really more dangerous to have in the house than gun-powder—because every one knows the danger of that and is cautious. Good kerosene is cheap enough; if that can not be afforded, rather go to bed at dark than to use benzine in the lamps.

ANOTHER STUMP DESTROYER.

Last autumn we gave an account of the wonderful "Stumps Removed" of one Horton, William V. (by the way, what has become of William, "Willie we have missed you"), that took two nails, a wire, and some of the powder, and the rest was left to electricity. There is a chap going through the Southern States—stumping the country so the speak, with an "exterminator" that beats Horton's all "out of sight." It is Wm. F. Buchanans' "Lightning Sprout and Timber Exterminator." You bore a hole, put in a spoonful—and away goes your tree—that is "within six or twelve months," quite long enough for the seller to get well out of the way. No nails—no wire, nothing but a hole and the "exterminator." We are left in doubt as to what it is, but as a spoonful is used it must be a powder or a liquid. It is called "Lightning," but if 6 to 12 months is Buchanan's idea of lightning, we prefer Horton's electricity, which did it in two or three....The mention of lightning and electricity as applied to trees and stumps suggests

THE WAR OF THE BATTERIES.

Elias still sends out his affidavit that there "ain't no sich pusson" as Prof. J. C. Boyd, while we have every reason to believe there is such a person, for have we not his circulars, and is not his name upon them? And he calls himself a Professor, and he does *profess* at a remarkable rate. One correspondent writes that he would expect a piece "cut from the end of an ear of corn" to do as much good as one of these batteries, and he is right. It is a remarkable illustration of the power of the imagination that people who wear these things think they perceive an effect from them. It is utterly absurd to suppose that wearing any combination of metals that may be put together in the form of a medal can send any electricity *into* the body. These batteries and the claims made for them show an entire lack of knowledge of the most elementary laws of electricity. Of the two we like Boyd's the best, as he, in explaining his battery, says: "That the various blocks of metal were so placed that when the electricity was formed it would be formed *in gimlet shape*," and that it would "*pass on twisting*." If we are to have electricity, let it be by all means of the "doubled and twisted" sort. The eccentric Rafinesque once sent a paper to "Silliman's Journal," describing 15 species of lightning. Had he lived in Boyd's time he could have added the "gimlet-pointed," and thus made 16 species. But these New York Batteries must step aside, and

MAKE ROOM FOR A BOSTON BATTERY.

Here comes Doct. Dye, who unites with his battery an absorption pad. Electricity sends disease out of the body and the pad absorbs it before it can go back again. But we can't help thinking what a dangerous thing that pad must be after it has gone absorbing for a while. As the same circular informs us: "It will not wear out," and as we are given nearly the whole catalogue of diseases which it will absorb, we think that the Boards of Health should look after these old pads....One of the frauds recently brought to our notice, is an "Artificial Ear Drum." The sender should give us his name (not for publication), and also that of the seller of the "Ear Drums"... Here are several letters from evidently intelligent writers, either making inquiry about, or sending to us as something new, the circular of

THE "REV." JOSEPH T. INMAN AND HIS RECIPE.

So far from being new, he is one of the oldest of humbugs. Looking back in our files, we find the first mention of Joseph in November, 1864. How much earlier he began his career we can not say. During all these 16 years we have many times exposed his trick, and at this late day the necessity seems as great as ever. If the fellow ever had a right to the title, Reverend, he has long ago lost it, for he works by trickery, and his circular is a printed lie. These are plain words, but they best express our meaning. His little advertisement of only 7 lines

appears in almost every paper; even those journals that profess to discriminate in advertisements, probably deceived by the "Reverend" part, publish this. It offers "to all who are suffering from the errors," etc., of youth, "a recipe that will cure you FREE OF CHARGE." Of course this is a very taking offer, to be cured and "free of charge" meets the case of a vast number. The applicants for the "recipe" receive a four page circular, which gives the personal history of Rev. Joseph, and tells how he was cured by what he calls the "Corrassa Compound." The "Recipe" we give once more:

EXTRACT OF CORRASSA APIMIS.....Eight Drachms.
EXTRACT OF SELARMO UMBELIFERA.....Four Drachms.
POWDERED ALKERMES LATIFOLIA.....Three Drachms.
EXTRACT OF CARSADOC HERBALIS.....Six Drachms.

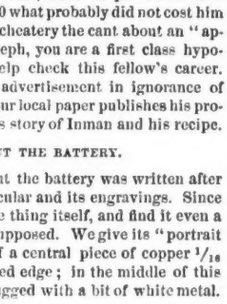
Then follow directions to mix it and to keep it well covered, and for taking it. The recipient of this recipe if he takes it to an apothecary, will be told that they have no such articles; he will learn the same story at the next drug store, and so on. If he applies to a competent and educated apothecary he will learn that there are no such articles, that the wonderful recipe is nothing but a useless

MEDLEY OF BOGUS NAMES,

made up to appear like scientific names, and badly done at that. These names stand for no drug known in pharmacy or medicine, and for no plants known to botanical, or other science. If the disappointed holder of the "Recipe" reads the circular more carefully, he will find that his trouble has been anticipated. He will read on page 3: "As the drug stores can not be relied upon to procure new remedies of pure quality [the scamp!], I can forward the CORRASSA COMPOUND in packages, ready for use (put up safe from observation), to those who need it, at the price which it costs me [Hear him]. My means make me independent. I seek no other reward for sending the remedy than the satisfaction of doing good, and the blessing of an approving conscience" [Good boy!]. We read further: "The cost of each package (including the Government stamp) is Three Dollars and Thirty Cents ($3.30), [nothing like being particular, that 30 cents gives a charming air of accuracy.] The postage is twenty-one cents. The price then of one package, sent by mail to any address, is Three Dollars and Fifty Cents ($3.50)." All the rest is unimportant. The "Free of Charge" according to the Reverend Joseph T. Inman is $3.50. This is his trick, a very mean one it is, as it is nothing more nor less than obtaining money under false pretenses. The fellow advertises to send a recipe free of charge—he sends a recipe which is a printed lie. He *knows* that the unfortunate can't get his stuff, offers to provide it at a rousing big price—for $3.30 what probably did not cost him 30 cents—and adds to his cheatery the cant about an "approving concience." Joseph, you are a first class hypocrite. Our friends can help check this fellow's career. Many papers publish his advertisement in ignorance of these facts. Wherever your local paper publishes his proposal, show the editor this story of Inman and his recipe.

MORE ABOUT THE BATTERY.

What is said above about the battery was written after an examination of the circular and its engravings. Since then we have procured the thing itself, and find it even a worse fraud than at first supposed. We give its "portrait life-size." It consists of a central piece of copper 1/16 inch thick, with a scolloped edge; in the middle of this piece is a circular hole plugged with a bit of white metal. Around this copper cent-er are small metal discs of two sizes and of three kinds, arranged as shown in the engraving, where the dark portions indicate copper, the shaded ones brass, while the light portions are of some white metal—but not having a blow-pipe or chemicals at hand, we can not say what kind of tea-pot stuff it is. These 14 pieces are set in a white metal ring, into which they are crowded, and are held in place by friction; though we are not sure but the larger white discs have a minute touch of solder. We have been thus particular in showing how the thing is made, as those who have but the most elementary knowledge of electrical action will see at once that it is absolutely



ELECTRIC BATTERY.

IMPOSSIBLE FOR ANY ELECTRICITY

to be generated—that is, any free electricity—with these different metals in absolute contact, unless indeed it may be of the "gimlet-pointed" kind, a style unknown to science, however it may be to "Professor" Boyd. There is no more development of electrical action between these bits of metal than there is between the coins in one's pocket—and we pronounce the thing to be an

UTTER BARE-FACED FRAUD.

There is one melancholy feature in the exposure of such successful humbugs—for, so far as the numbers sold go, this has been a success—that is, the comment it suggests upon the intelligence of the community. We make boasts of our popular education, of the general intelligence of the people and all the rest of it. Yet here is a thing, in its structure violating the simplest laws of science, bought and worn by hundreds, who deliberately assert that they can feel its electrical action, and claim to be benefited or cured by it. Yet it can have no more effect than the horse-chestnut carried about their persons by the ignorant, as a "preventive of rheumatism!"

Peach Trees and Frost.—A frost at blossoming time ruins the peach crop every year—in the papers. Aside from this regular killing there are seasons in which real damage is done and an actual frost, when the trees are in bloom, must seriously diminish if it does not entirely cut off the crop. Several years ago we suggested that owners of peach orchards try the method of warding off late frosts followed in the vineyards on the Rhine, which is to make a smoke. As a curtain of vapor in the form of clouds will prevent frost, so will a curtain of smoke. The danger of frost is greatest in the hour or two before sunrise; the vines which have been gradually cooling all night, do not reach a temperature so low as to be dangerous until towards morning. Then the smoke heaps are started and a cloud of smoke hangs over the vineyard until the appearance of the sun removes all danger. Fires of brush and wood rubbish are started, and wet straw is thrown upon them to produce a copious smoke. Frost occurs only on calm nights, but even then there is usually a slight current of air and the fires should always be at the windward side. If any have tried this method in the peach orchard we should be glad to hear with what results. It seems a matter well worth testing, and may be of great value.

A Veteran Peach Tree.—P. M. Augur, reports in the Middletown, Conn., "Constitution" that he examined a peach tree at the residence of Henry Hart, in Saybrook, Conn., which, at 2 feet 10 inches above the ground, measured 4 feet around. It had four principal branches having the circumferences respectively of 2¼ feet, 2.15 feet, 2 feet, and 1.14 feet—a total of 8¼ feet, or twice that of the main trunk. The tree has been a constant and abundant bearer.—This indicates that the peach tree is not necessarily a short-lived one, as is generally supposed.

Hens Eating their Eggs.—Where this habit has been formed it is a difficult matter to break it up, and it is generally the best and quickest way to kill the hens. If the bird is worth the trouble, a nest may be so arranged that the egg, when laid, will at once roll out of sight and reach. Some one has invented a "bit" to prevent the habit, but we know nothing of its value.

Late Frosts.—We expect early frosts, and in autumn accept the damage they do as a matter of course. Late frosts in spring are most disheartening; one crop, which was yesterday pushing forward so encouragingly is today blackened and dead, and we have either to begin anew with seed sowing, or with transplanted crops: fall back upon the reserves which the careful gardener preserves for such a contingency. But few are aware how slight a thing will protect from frost. It is the radiation of heat from the plant; its rapid cooling that kills it. In a clear night every exposed thing on the face of the earth is giving off heat, and when these cool down to a certain point, the moisture in the air falls upon them in frozen particles and we call it frost. If the night is cloudy, the cooling is less rapid, the clouds are said to reflect the heat given off; the air may seem as cool, but there is no frost. For tender plants a thin muslin, even a paper, suspended over them, will prevent injury. Tomatoes in the vegetable garden, and a host of things in the flower garden may be saved by the use of a curtain or screen, if only of paper. Whatever will prevent rapid radiation of heat will answer. We once had a bed of tender plants too broad to readily arrange papers upon and frost was predicted. A lot of brush was handy and this was stuck rather thickly in the bed, and then some light hay scattered upon the brush. The plants were saved. The object of the brush was to keep the weight of hay from crushing the plants. The French gardeners build a little straw tent over their tender plants; this is so arranged that the plants can be uncovered by day and housed by night. Cucumbers and other such plants will grow much more rapidly if covered at night. Though not cooled down so low that frost is deposited, they are so much cooled during the night as to seriously check their growth, and if they are covered regularly this is avoided. Frames 6 inches high and a foot square covered with a pane of glass will be found very useful in the garden, especially in forwarding cucumbers and melons. An efficient substitute may be found in soap, starch, and other store boxes; the cover and bottom are removed and a bit of muslin tacked over the top. Such frames, when their convenience is once experienced, will always be kept at hand, as their cost is insignificant.

Sorghum—Early Amber.—The fact that the variety of Sorghum introduced a few years ago as the Minnesota Early Amber, is now called by the shorter name of Early Amber or Amber, is an illustration of our frequent protest against complex names. Life is too short and farmers too busy to say Minnesota Early Amber Cane when Amber Cane will answer the purpose, which is to distinguish the variety. That it produces a fine amber-colored syrup is just now of more general importance than the fact—apparently established beyond a doubt—that it contains a paying amount of cane sugar. When those who have never before cultivated sorghum, learn how to raise it and to properly handle it so as to produce a superior article of syrup, a great point will be gained, and the farmer will then be prepared for the next step—the production of sugar. But we think it would be a great mistake for one entirely inexperienced to sow a large breadth to sorghum with a view to the production of a large amount of sugar. Go slow in this, as in all new things. Even in small quantities for syrup, the means of working up the crop should be thought of. But few are able to purchase a mill and evaporator for merely making syrup for their family use. If some one at no great distance is prepared to work up the cane for others, then it may be safely planted. If there is no mill in the neighborhood, then there should be co-operation. One farmer can procure an outfit, if several other farmers will raise enough cane to keep him at work during the season. Or several may unite to purchase in common. This matter should be determined upon well in advance, and the machinery ordered early, so that it may be set up and in working order well in advance of the harvest.

Successful Farmers in Hard Times.—An agricultural writer who has recently returned from a trip through the Eastern States says in an exchange: "A most noticeable thing in travelling among farmers is, that those who have held their own the best through the recent times are the ones who are the most progressive. By this I mean those who have been quick to see what was best adapted to their line of farming, and who endeavored to supply what the local demand called for. Such men have been the first to apply improved methods of cultivation and to cultivate well; to apply a liberal dressing of dung or chemical manures to their soils, knowing that it costs no more to cultivate a field which will yield a hundred-fold than one that will yield thirty-fold. If the prices are low the largest yield may pay a good profit, while the lowest means a serious loss."

Lawn Mowers.—Pennsylvania—Philadelphia.—We are not about to discuss the merits of these excellent mowers. Their makers usually set forth the superior qualities of their machines, respectively, in our advertising columns. But to have the maker of one mower advocate the merits of the rival machine is a novelty. Yet this is just what was done last month, when Messrs. Lloyd, Supplee & Walton were made to claim a high rank for the Philadelphia Lawn Mower, while in reality they are makers of the *Pennsylvania* Lawn Mower. The substitution of one name for another in this case is one of those unaccountable blunders that will sometimes occur with types—of course it is the fault of the types—and all we can do in the case is to state the fact that it is the "*Pennsylvania Mower*" and not the Philadelphia Mower that is made by Lloyd, Supplee & Walton, and that their machine has met with approval wherever it has been used. As to the Philadelphia Mower, its reputation is well established, and as every one knows is made by Graham, Emlen & Passmore, who will prefer to present its claims over their own name.

The Poultry Standard.—All who exhibit fowls are aware that the judging is—or ought to be—done in accordance with the American Standard of Excellence. This consists of a "Scale of Points" for each breed of land and water fowls, carefully considered and fixed upon by the American Poultry Association, and is by the authority of that body published in a book. At the Annual Meeting for 1880, held at Indianapolis, a number of amendments were made to the Standard affecting several important breeds. These have been published on a sheet as a Supplement, and can be obtained by sending a 3-cent stamp to the Secretary of the Association, Geo. S. Josselyn, Fredonia, N. Y.

Portable Sweep Power.—"W. H. S." A portable sweep power would not be nearly so convenient as a tread power, but any of the large dealers in agricultural machines, whose names appear in the advertising columns, could supply one. One is about as good as another, as they are all made on essentially the same principle.

Bee Notes for May.

BY L. C. ROOT.

The success of the beekeeper for the season will largely depend upon his properly conducting the operations of the present month. Those who read these "Notes" are aware that I differ with most writers as to stimulating early breeding. I speak chiefly from experience gained in Central New York, and my advice is especially applicable to similar climates. Those in warmer or in colder localities must time their operations according to the difference in the seasons.

With us the Soft Maple blossoms about May first. This I find the most suitable time to remove bees from their winter quarters. As soon as they are placed upon their summer stands and have had a flight, honey will be uncapped and removed to the center combs. The queen will at once begin to deposit eggs, and a general movement will be made towards rapid increase. The beekeeper should be prompt to aid, in all possible ways, the securing of the large force necessary to gather the stores of honey which will be afforded, as the season advances. If the stock is reasonably populous and has a good queen, proper food and a good degree of warmth are the essentials to its rapid increase. If the number of combs to each colony was limited as directed in April, supply each hive with additional combs, as the strength of the swarm demands. Sometimes, in the best swarms, nice clean combs may be placed in the center of the cluster when the queen will occupy them more readily; but take care not to injure the swarm by spreading the brood too rapidly. As brood is now being extensively reared, large quantities of honey are consumed, and care must be taken that the supply is not exhausted. During this month, in many localities, the Yellow Willow, and Sugar Maple, will furnish sufficient honey to aid largely in the increase The general bloom of fruit will closely follow the yield from these, which often affords a rich harvest, and brood-rearing will go on rapidly. Following the fruit blossoms and preceding White Clover, there will be a period in many localities when little honey will be gathered. Breeding may have gone on up to this point to such an extent, with so great a consumption of honey, that the supply of food may now be entirely exhausted, the result of which is more disastrous than beginners can appreciate. Breeding will not only be discontinued, but large quantities of immature brood will die for want of food, and be removed from the cells. If at any time this scarcity occurs, feeding is absolutely necessary. To sum up for this month: Do not remove bees from the cellar so early that the weather will be likely to hinder continued breeding. When once started, see that the entrance is small, that the warmth of the hive is retained, and that there is always a supply of food. Add empty combs, but only so fast as the strength of the colony requires. Never add more combs than the bees will occupy, as it increases the space that must be kept warm, which is not only unnecessary but harmful.

QUESTIONS AND ANSWERS.

FEEDING BEES TO STIMULATE BREEDING.—"In the spring shall I feed colonies with syrup that have a good supply of sealed honey?"...."If at no other time, is it necessary to feed colonies having sealed honey, during the scarcity between apple blossoms and white clover?"...."Are weak colonies with an abundance of sealed honey benefited by feeding syrup?"...."To stimulate breeding shall I uncap unsealed honey?"....These are very practical questions. While I am an advocate of judicious feeding, if done under the direction of an experienced operator, yet there are so many chances of failure, if improperly conducted, that I hesitate to advise the average beginner to practice it under the above mentioned circumstances.

STRENGTHENING WEAK COLONIES.—"To strengthen a weak colony, or one that does not work in the boxes during honey gathering, will it be safe and a benefit to remove it to the stand of a stronger one, and thus exchange them?" ...When bees are gathering honey very rapidly I have practised this with success. If honey is not gathered plentifully, it would be preferable to remove cards of brood from the stronger stocks, and exchange them for empty combs from the weaker ones.

AT WHAT AGE TO DESTROY QUEENS.—"Do you kill your queens when they are three years old?...."Shall I not leave our queens just as they are, when by the presence of brood I know she is present?"....As a rule we do not rely upon a queen after the third season. Unless a close record is kept of the different colonies, it will be difficult to ascertain the exact age of all the queens. If we have a choice queen, we do not destroy her until we see signs of deficiency. Such queens as prove themselves prolific by a good quantity of brood, we would prefer to leave undisturbed.

GLASSING HONEY BOXES.—"Shall we put the glass in boxes filled with honey, as soon as removed from the hives, or not until time to send it to market?"....For many reasons it is preferable to wait until ready to ship.

SWARMS IN HIVES WITH COMB FOUNDATION.—"C. W N.," asks, "In hiving a natural swarm in a hive filled with comb-foundation, would you put the bees directly into such a hive, or gather them first in a common box hive and transfer them in the evening?"....Hive the bees in an empty hive just like the one containing the frames of comb-foundation. Then place the hive containing the foundation over the one containing the bees, and they will pass up into it, when the lower hive may be removed. This is preferable to waiting until evening and disturbing the bees a second time. If hived in this manner early in the day, a fine start will be made at comb-building. Comb foundation used for this purpose should have wires incorporated with it to prevent sagging.

The Weeklies' "Agricultural Column."—The importance and the popularity of Agriculture in this pre-eminently agricultural country, is recognized by the newspaper press generally, by a maintenance of an "Agricultural Column." As a rule, these columns are a positive injury to the interest they would compliment, or even try to benefit, from the fact that those who edit—or rather "scissor" the contents, are not fitted by experience and education to do their work well. There are, if possible, more quacks among professed agricultural writers, than among medical practitioners, and these ambitious gentry have the faculty of setting forth their ideas, their whims, their crude theories, in a language and style that make them appear very plausible. Such items are quite as likely to go the rounds of the "Agricultural Column," as the cautious, careful teachings of well-informed, experienced, practical men. There are, however, exceptions to this general sweeping charge against the so-called "Agricultural Columns" of the weekly press, and the number of exceptions is increasing. First, are those who make up such columns, not from the usual floating deadwood or *light* wood, but only make their selections from the few agricultural journals of undoubted reliable and standard character. A few others go to the expense of securing the aid of men of acknowledged study and reliability to edit or provide material for such columns.—The above remarks were suggested for the moment, by noticing the series of articles on "Recent Developments on Dairying," by F. D. Curtis, Sec'y of the N. Y. Dairymen's Association, which are being issued from week to week in the "Northern Christian Advocate," of Syracuse, N. Y., whose agricultural, as well as other columns, are really edited with care and not at random, in the easy way, with "scissors and paste."

The Corn Crop.—The value of a corn crop cannot be fairly estimated by taking into the account the grain and fodder produced. It should be looked upon as a fallow crop, furnishing the opportunity for the thorough pulverization of the soil and the extermination of weeds in the labor required for promoting its full growth and development, while the raw manures that can safely be used will have an influence upon the soil that, the other more sensitive cereals will in their turn profit by. The manner in which manure should be applied will be determined by its condition and the economical disposition of the labor required in hauling and spreading.

The New York Horticultural Society is showing signs of renewed life in several directions. Its Monthly Exhibition, held on April 6th last, was so attractive that the room was so crowded as to suggest the need of a larger place in which to hold future monthly shows. We have recently received a copy of the essay read by Peter Henderson at the March meeting, on "Horticultural Progress," especially as relates to New York City. This interesting sketch is prefaced by a list of the officers and members of the Society, and all is produced in a style of such exquisite neatness that indicates rare good taste on the part of some one. We would again remind our friends that these exhibitions are held on the first Tuesday in each month, at 2 o'clock P.M.; all are welcome.

"Stagger Weed."—A Virginia correspondent writes that many horses and cattle die from eating a plant popularly known in his locality as "Stagger-weed." He sends a specimen which will, we think, soon flower, when we shall be able to determine what it is with certainty. Our correspondent resides in Tazewell Co., and the object of this note is to ask if a plant poisonous to domestic animals is known as "Stagger-weed" in other parts of the State. We are aware that there is a "Stagger-bush," but this is an herb that dies down at the approach of winter and comes up tender and succulent in spring. Any information concerning the effects and antidotes, if any are known or suggested, will be welcome.

Increase in Value.—Good Doct. Torrey in his lectures, as an illustration of the increase in value imparted to raw material by the processes of manufacture, used to compare the value of a pound of crude steel with a pound of the hair-springs to watches. We have now forgotten the figures he gave, but were reminded of the incident by an item now going the rounds of the papers, which begins with 75 cents worth of iron ore. This amount of ore is said to yield $5.50 worth of bar iron, which will be worth $10 made into horse-shoes. Converted into steel it will make $6,800 worth of needles, $200,000 worth of watch-springs, $400,000 worth of hair-springs, and if made into pallet arbors (which are parts of a watch) its value would be $2,500,000.

A Great Waste.—It is the practice of many dairy farmers to kill the calves at a very early age, long before they can be—or should be, of any use as food. This is a source of loss, which, take the country through, is something enormous. An animal already grown to the weight of 60 to 80 pounds, and which might, through a few weeks of proper feeding, be made to yield a large amount of food, is killed, and all that is saved is the skin! There are cases when it is the best economy to get rid of the calves so soon as they come, but these are exceptional, and in the ordinary dairy of a farm practising mixed husbandry, there is seldom, if ever, a call for such an untimely and unprofitable removal of the calves. It will pay well in many cases to grow the calves until they are six months old, and thus produce an animal weighing 500 pounds, and of the best quality, commanding a ready sale in the markets.

Improvement Through the Males.—The only practical method of the means that is within the reach of the average farmer, of raising the standard of a herd of cattle, flock of sheep, etc., is through pure blooded males. A male of this character may be bred to a considerable number of females, and all of the offspring will be brought more than half way up from the level of the dam to that of the sire. The sire being pure bred, will have the greater power to fix his characteristics upon the offspring. If the qualities of the Ayrshire are desired, it is not necessary to buy a full herd of Ayrshires, but instead, a single pure blooded bull, and with ordinary stock a good herd may be produced, which will, year by year, by careful selection, become more and more desirable, and thus, in the course of a short time, a very valuable stock may be built up at a comparatively small cost.

The Massachusetts Horticultural Society continues its annual offer of special prizes for the best essays on various horticultural subjects. For 1880 a prize of $50 is offered "For the Best Essay upon any Special Action of Fertilizers, illustrated by Accurate Experiments." A prize of $25 "For the Best Essay upon Flowers for the Home, with lists of the Best Annuals, Herbaceous Perennials, and 'Bedding Plants,' and a comparison of the merits of these classes." These prizes are designed to bring out new and important facts upon the subjects chosen. "Competition is open to all." Further information can be obtained by addressing the Secretary, Robert Manning, Boston, Mass.

Extreme Cold Endured by Seeds.—Some recent experiments by DeCandolle and Pictet, of Geneva, are of interest as showing the great cold which seeds may endure without injury. Mustard and cabbage seeds and grains of wheat, without previous artificial drying, were enclosed in sealed tubes and subjected to a temperature of 50 to 80 degrees below zero Centigrade (60 to 100 of our ordinary Farenheit thermometer), for from 2 to 6 hours. These seeds afterwards germinated promptly and with a vigor equal to those not thus treated.

Suggestions offered to Farmers in a recent "Bulletin" issued monthly from the rooms of the New Hampshire Board of Agriculture: "Pursue a higher and more economical line of farming, by adopting a better system of breeding and feeding domestic animals; by a more thorough preparation of the soil, and increased tillage; by adapting products to the markets, or to economical consumption; by the use of machinery in all farm operations; by increasing the manure heap, and its better care and application, supplementing it by the use of chemicals and specific fertilizers as required by soil and crops; by a judicious rotation, and the sale of crops in the most condensed form; in short, strive to secure the highest results from the least expenditure."

Vegetation Retains Soluble Matter in the Soil.—The April number of the "American Journal of Science" relates the following: "Soil three inches deep was placed in two glazed earthenware pans 17 inches in diameter, on July 21; four seeds of white clover were sown in one, the other being left blank. The pans were equally exposed until October 4, when the drainage water was collected and analyzed; that from the clover soil contained 48.1 grains of solid matter per gallon, the other 220 grains. The author concludes that rain removes much more matter from an uncropped than a cropped soil." We need more such experiments as these.

Bad Cement.—"J. Q." A cemented cistern should be left for a week or 10 days for the cement to set and harden, before the water is let in. If the bottom leaks after that, the cement must have been of poor quality. It would be well to empty the cistern, and give it a coat of clear cement, without any sand with it.

Like Produces Like.—Some years ago, we planted a number of hills with small potatoes, and by the side of them, an equal number with large ones. Both rows received the same attention; and on digging, the large "seed" gave 3½ times as many pounds as the small ones. Do not try to save the large potatoes, by planting the small ones: there is good reason why it does not pay.

To Measure Corn in Bulk.—"J. P. D.," Point of Rocks, Md. To measure corn in bulk, find the number of cubic feet by multiplying the length, width, and depth of the crib, or wagon box. 1⅕ cubic feet will make nearly a heaped bushel of ears, which is equal to half a bushel of shelled corn. A heaped bushel has 2,750 cubic inches, a cubic foot and a half contains 2,592 inches, but a bushel of ears will make a little more than half a bushel of corn, and the excess in this will about balance the deficiency in the measure.

An Experiment Station in New Jersey.—One of the last acts of the N. J. Legislature was to provide by law for an Agricultural Experiment Station, and in no State is one more likely to prove useful. Should the Governor approve of the bill, good work will be done.

"Trimming Up" Evergreens.—A correspondent in Troy, N. Y., writes: "On the place which I have purchased there are many large evergreens, and the foliage around the house is so dense that I wish to trim up some of them. When is the proper time to do it?"—There is no day in the whole year which is *proper* for doing that which ought not to be done, and trimming up an evergreen tree is one of those things. A Hemlock, Spruce, or Fir, with its lower branches upon the ground forming a pyramid of green, is a beautiful object. The same tree with its lower branches cut away, and its naked trunk exposed, is a forlorn object that has no more beauty than a hay-cock upon a bean-pole. Our correspondent should first make a careful examination to see if his object can not be accomplished by the removal altogether of some of the trees; this would be far better than to mutilate them. We have no doubt that to "trim up" several of the trees would give to the place a very different aspect, and one that will be very unpleasant.

Letters that are not Answered.—When one like "B. F. T.," Huntingdon Co., Pa., fills several pages with questions, covering not only the whole routine of farm management, but also asking advice as to whether he had better keep school in winter, or keep on the farm during that season, he cannot expect an answer. Occasionally a correspondent, like this one, quite misunderstands the duties of an editor. When one comes across some difficulty in his farm work, is in doubt whether it would be better to follow this or that course, and wishes advice in the matter, it is very proper for him to state his case and ask our advice. But when a novice in farming asks a long string of questions to which a year's experience on a farm would teach him the answers, he must not expect us to write a treatise on general farming for his benefit. Take the letter in question. We see but little that is not sufficiently met by our "Notes about Work," take the season through, and on several of the topics there have been special articles. More than this, our correspondent wishes us to tell him what it would cost per head to transport cattle from his place to market. We could write to the master at his depot and ascertain, but it will be much easier for him to apply in person.

Commission Merchants.—It is rarely the case that one who raises fruits and vegetables, is also the one who sells them to the consumer, and it is an absolute necessity, especially with produce raised a long distance from the place of sale, that there should be parties who make it their business to sell it. The raising of fruits and garden truck is easy enough, the proper selling of the produce is not so easy, and the success of the grower, depends largely upon the seller. There is probably no business in which there are such ample chances for disagreement, and dissatisfaction, as that of the produce commission dealer. When all is managed with the strictest integrity, guided by the best judgment, the "returns" may fail to be satisfactory to the grower, who changes his commission man, only to fare still worse with the new one. Among growers, the commission men have a bad name, yet there are in that business men just as upright, and as honorable, as are to be found in any pursuit. Then again, there are others who would be described as "on the contriary quite the rewerse." The business is one which offers peculiar inducements to swindlers and sharpers. It can be carried on, for a while at least, with very little capital. The articles come to them on credit, and are sold for cash. Many a grower knows to his cost, that there are bogus commission dealers. To those who write us about this or that person who wish their consignments, we must give the advice not to ship a single package to one who can not refer to well known persons as to their business standing. As the peach season approaches, the peach districts are infested by persons representing themselves to be commission merchants, and offering great inducements to peach growers to consign to them. As a general thing, these fellows have no location, and if they do any business, it is as squatters somewhere on the sidewalk. We can only say to enquirers, that by taking proper pains, they can find commission merchants of good repute. When dealings are commenced with one, do not change upon any slight provocation. It is a part of the business to have disappointments, and no human foresight can prevent losses on perishable articles, if they reach the market when it is already glutted.

Horticulture in Nebraska.—Nebraska carried off the prize from all other States for her fruit several years ago, and she deserved it. The State has always taken an active interest in fruit-culture, and it now keeps it up, as we see by the programme of a meeting of the State Hort. Society held at Lincoln in January last. Liberal premiums were offered for winter apples and pears, and also for flowers, and a number of interesting addresses were given. The State is divided into six fruit districts, and reports were made from each. The prominence of Nebraska as a fruit-growing State is largely due to the efforts of this Society, and the success of the Society is largely due to the active interest of its President, Gov. R. W. Furnas.

Plowing.—The character of the soil; the crop to be grown, and the kind, and amount of manure to be applied, are all factors which determine whether the plowing is to be deep or shallow. Light soil needs shallow plowing, and heavy soil with much vegetable matter, does best when plowed deep.

A Million Stamps.—"L. C. R." The story started in England, 10 or more years ago, and has been now and then revived in this country, that if some young lady can collect a million cancelled postage stamps, she can come into the possession of a large fortune. Then the version was, that stamps would be purchased in lots of a million each. There is no foundation for either version. Our correspondent does not believe it, but would like to be able to give a reason for discrediting the idea. That postage stamps which have been used are of no possible use, save as paper stock, and as such, are worth only about 3 cts. per pound, should be sufficient.

The Adulteration of Butter.—The occurrence of any more salt in butter than is necessary for its preservation is to be regarded as an adulteration. We do not know if examinations have been made in this country of over-salting for the sake of increasing the weight, but in poor grades of butter in London over 10 per cent of salt was detected, and the same sample contained a large quantity of water, so that the amount of real butter present was but 60 per cent.

The Apple-Tree Borer.—Even where the Borer is common but comparatively few understand its history, and we are not surprised that inquiries should come from California where it has heretofore been rare, if not quite unknown. California fruit-growers, who have so long been free from the pests so destructive to their eastern brethren, are, as their State gets older, becoming more and more annoyed by insect pests. The perfect insect of the Apple-tree Borer is one of the long-horned beetles; it is about three-quarters of an inch long, and has a pair of feelers more than half as long as itself; its body is brown, with two broad, nearly white stripes, hence it is called the Two-striped Saperda (*Saperda bivittata*). The beetle is seldom seen, as it is dormant by day but flies and works at night. The insects begin to appear this month, and next month the female lays her eggs on the bark near the ground. The young grubs soon bore through the bark, and enter the tree, where they live upon the sap wood, just beneath the bark, forming a cell or excavation the size of half a dollar. It lives, eats and grows here for about a year; then, having stronger jaws it in the second summer bores upwards towards the center of the tree, making a hole 3 or 4 inches long, which it then curves outward until its upper end reaches the bark again and, at the beginning of the third winter, it makes a bed and rests, in the next spring becoming a pupa, and soon after changing to a beetle which bores an exactly round hole through the bark at the upper end of its gallery, and comes out into the world to lay egge to produce more borers. This is the life history of the insect. Any "remedy" must be of a kind to keep the young borer out, or to kill it after it is in. Soap is found to keep off the parent insect. The base of the tree is kept clear of weeds and the lower part of the trunk is rubbed with soap; the application is repeated during June if washed off by rains. Young orchards are to be examined late in July or early in August. Weeds, trash, and about an inch of soil are removed from around the base of the tree. The bark is carefully examined, if chips are found, or the bark looks dead and dark, cut into it with a sharp knife and cut the borer out. If the insect has bored upwards, it is to be followed by a wire, a piece of whale-bone, or a twig, and killed.

(*Basket Items continued on page 203.*)

Fences and Fencing.

We are greatly obliged to our readers who have responded to the request for reports of their experience in the use of barbed-wire fencing, and though we can present only a very small portion of the communications received, they are highly esteemed, as they supply the information we much desire, in getting at the wants of the country. We solicit still further contributions from those of our readers having experience in the use of such fences,—those not directly or indirectly interested in their manufacture or sale.

A large number of suggestions, plans, etc., for metal *posts* have come to hand, and are on file for reference, and reply as we can find time. The great rise in iron and steel took away much of the interest in this branch of the subject; but since our last issue there has been a decline of 20 to 30 per cent in the price of iron. The decline is likely to continue from the causes previously referred to, and this subject will, in consequence, have an increasing interest, and new devices and inventions will be in order. In the present issue we make room for extracts from correspondent's letters, taking them almost at random from our letter files.

Barbed Fences—What Correspondents Say.

R. Noyes, of Coles Co., Ill., writes: "....I have no direct or indirect interest in any fence, except that I want to use the cheapest and best. Six years ago I put up 40 rods of barbed wire fence and each year have added to it, and like it so well that this year I am selling off (good) and burning up (decayed) both rails and board fence, because I think it better and cheaper to build wire fence than to repair the old, although I am making and selling new wooden rails on the place. As to posts, I find that a few good posts answer, with young trees set in the row so that when the posts are gone it leaves your fence an ornament instead of an eye sore. Then it is so cheap. Two wires will turn the worst large stock; three for calves and sheep, and five for hogs. The railroads use nothing else here; and as a man and a boy can put up half a mile in a day, after the posts are set, it saves labor. 'Travelers' do not steal it for kindling or seat boards, nor travel across your land. As to its being 'barbarous,' I have never known an animal really hurt with it, and if they are scratched they will not try it again. The only place I have found it would not do was around small lots where numbers of cattle are kept; they will hook each other through it."

L. B. Goodwin, of Rock Island County, Ill., writes...."My own fence has only one barbed wire above two boards, and has turned stock thoroughly for two years. When I had a board in place of this wire, we often had the fence broken (mostly by colts rubbing against it), which never has happened since the wire was put on. There is a great deal of barbed wire fence in this neighborhood, and the quantity is increasing. Cattle are 'free commoners' here, and there is a large area of open prairie, where 300 or 400 head of cattle and horses run through the summer, and I have yet to hear of any break in any barbed fence, unless the cattle were stampeded. I know of several instances where horses have been seriously hurt by running against the barbs. One of my neighbors had to sew up 10 gashes on a valuable mare of his which ran against the wire and became frightened, and dashed from side to side of the narrow lane which led to his pasture, some cuts reaching the bone. Another case was where a horse in rolling got entangled in the wire, and was so badly hurt that its owner shot it. I had a pair of colts which were cut slightly,

and they now keep at a respectful distance from any kind of wire. I consider barbed wire as dangerous to stock unaccustomed to it, but as cattle and horses need but one introduction to the stranger, and shun it ever after, we can not afford to dispense with it...."

Warren Stone, of Lyon Co., Kansas, writes us "....Here on these treeless prairies barbed wire is almost a necessity, and without doubt is a great blessing. The land has lain vacant around Emporia for years, because it was impossible to open a new farm and fence it with boards at the price demanded for lumber here. But now everything is changed; new farms spring up as if by magic. It is only a question of two days to fence a quarter section. We have a post driver here run by horse-power, that has a mallet weighing 200 lbs. A 50-lb. one would make no impression on this prairie-sod. I find that it is impracticable to make a *good* fence unless the posts are driven and the wire stretched *tight*. Almost every kind of barbed wire is in use here, and none are too severe; the town cattle will stop for nothing else. We make a very good fence with two wires, that is proof against cattle. The best fences here are two wires with a board between them. I put the board on top so that horses can see it better. But for all purposes I would want no better fence than two wires and a board between. I write this to encourage you in the work of commending wire fences. It is so quickly done; there are no boards to blow off, decay, etc. No other kind of fence is made here since the introduction of barb wire. I think it only a question of time when it will be so everywhere."

Louis Voruz, of Coffey County, Kansas, writes us: "....I have had a year's experience with one kind of barbed fence, illustrated in the *American Agriculturist*, one with loose twist, four-pointed wire barbs, long and sharp. I had a mare dart through at full gallop, lifting the corner brace post clear off the ground, and sawing a fearful gash across her breast. She however recovered quite quickly. I have about a mile of two-wires fence, with posts two rods apart, and in some places with two stakes stapled between the main stakes. As a rule, an animal which has once been through that fence does not care to repeat the experiment. I am in favor of sharp, straight barbs [standing out perpendicular from the wires, not hooked or inclined in either direction] *but not long enough to penetrate the vital part of any living thing*. As for injuring people's dress along the public thoroughfares, well, I shall care for that when the majority of said people make it unlawful for stock to range at liberty in the public roads. I am only interested in barbed wire as a buyer for my own use....."

Mr. Voruz gives in detail his simple plan of putting up the barbed wire which is usually sent out from the manufactory wound on a frame or spool. A suitable stick or wooden rod being put through the center of the spool, is laid across the top of the rear end of a wagon box, the projecting cleats preventing it from slipping back. The end being fastened to the first post, the wagon is driven along the line, the wire unwinding from the top of the spool. When the end of the line is reached [or a sufficient quantity is reeled off] this end of the wire is twisted or tied to one of the spokes of the hind wheel next the fence, near the hub. The axle is then lifted to clear the wheel. The team is then unhitched and the wagon tongue fastened to a post or a crow-bar thrust in the ground. Then by turning the wheel by hand the wire winds around the hub, and we have strong lever power, sufficient to stretch the wire very taut through its whole length. It is then only necessary to pass along and staple it fast to the posts. At first the barbs may catch in the grass, and it may be necessary to lift it by hand in some places until a few turns of the wheel brings it up from the ground. The operation is repeated for the other wires. I learned this practice from a neighbor, and hope it is not patented or patentable. [We do not think it is or can be patented.—ED.]

JAMES R. GILLIS, Louisa County, Iowa, writes; "I am using barbed wire fencing, and find it efficient (if properly constructed) in restraining cattle and horses. I have no sheep, and use board fences to enclose hogs. In Iowa, three barbed wires, or four wires two of which are barbed, make a legal fence. Posts may be two rods apart, but must have a stay lath between, to prevent sagging. The top wire must be not less than 48 inches from the ground, nor more than 56 inches; bottom wire not less than 16 inches, or more than 20 inches. Hogs and sheep are not permitted to run at large. —The common error in building wire fence, is in getting it too high. I think, three wires well strung, not more than 45 inches from the ground to the top wire, will turn any sort of cattle or horses—unless it may be calves that can run under. Stock soon learn to avoid it. Horses may be taught by being led against it a few times. I have used barbed wire fence for some months as a pasture fence for ten horses, and have only had one scratched, and that not seriously. I believe the day is not far distant in Iowa, when we will not be compelled to fence against stock of any sort.—I think I see a tendency on the part of the wire I am using, to rust. Wire put up in November last, has a great many rusty places in it. The paint or tar, or whatever is put on the wire, seems to scale off badly. For putting up long stretches of fence—say 100 rods or more, a steady team is the best appliance for straining the wire, and making it "taut." For short distances, "strainers" of some sort are better. The retail price of wire here, is very little more than before the advance in iron goods."

A. J. Thompson, of Walker County, Texas, writes: "....Like Mr. Robt. Wood, of Grant Co., Wis., I wish a fence that will keep pigs out, and I propose one, part of wire and part plank; posts of cast iron. Let every alternate post have a mortise 2x12 inches, and the other posts a mortise 1x12 inches. Or, if preferable, let the mortise be 2x6 inches and 1x6 inches. Also have a second 4-inch mortise above the first. The first would receive a plank 1x12 inches, while in the other there would be two planks, each one inch thick and 6 inches wide; this would give about 20 inches from the ground to the top of the plank, sufficiently high to keep out hogs and pigs. The mortise 2x12 inches or 2x6 inches would receive the ends of the plank. Here they would lap, while the center of the plank would rest in the mortise 1x12 inches, or 1x6 inches. If the mortises were made 5 inches above the ground, dirt might be thrown to the plank to prevent anything from passing under. A hole might be cast in the center of the mortise to receive a bolt or ten-penny nail, to keep the plank from slipping, and could be easily removed to renew the plank if it should decay, without interfering with the remainder of the fence. Then place the wire any distance above you may wish, having places cast in the post to receive it. If desirable, mortises might be made in the top to receive a slat 1x4 inches. Stock could see this, and would not run against it...." [At present such cast-iron posts would be too expensive for general use. The same mode of construction could be applied to wooden posts. If the plan here described is not practically useful, it will at least suggest other modes. ED.]

Eastern Farmers—Raise More Corn.

We call especial attention to the experiments in Prof. Atwater's article on pages 180-1. Either the unanimous testimony of these trials by intelligent farmers on their farms is false, or corn can be grown at a profit with the right sort of fertilizers. These gentlemen get 50 bushels of shelled corn per acre, which they would otherwise buy at say 60 cts. per bushel, and an amount of stalks which, if rightly fed, are well worth $10, when ordinary hay is worth $10 per ton, that is $40 worth of fodder, at an expense of—including freight—$9 for fertilizers. And if they feed out the produce, the same rates that they pay for the valuable fertilizing ingredients in commercial fertilizers, will make the well husbanded manure worth the whole cost of the fertilizers. The great point is that the corn, aided by the inexpensive mineral fertilizers, gathers the most costly element, nitrogen, from natural sources. If it can be established, as these trials imply, that corn can generally do this, that it is, like clover, a "renovating" crop, that fact will be of untold value for our agriculture.—The "bonanza farms" out West will in their turn run out bye and bye. The mineral elements to bring them up can be had at comparatively little cost, but nitrogen in fertilizers is scarce and dear. If corn can gather it for us and give manure for other crops the portent of exhausted prairies is not quite as dismal as our political economists would make it, after all.

Benefit Yourself and the Public.

Those who omitted to carefully examine the articles on Fertilizers, pages 135-6-7 in the April *American Agriculturist*, should do so at once. There is yet ample time to secure the experimental fertilizers and test them on corn. Every one who does this, will not only gain much information, positive and negative, in regard to his own farm, that can hardly fail to be of great use to him in the future, but every such experiment that is made and reported adds to the amount of general information that will be of great and universal public utility. As a general rule, the fertilizers will more than repay their cost the first year by the increased product realized from their use.

Science Applied to Farming—LVII.

Fertilizers for Corn.

How to grow corn profitably is an important problem. The main factor is the manure. What are the best and cheapest fertilizers for corn, is a question that deeply interests most farmers in our older States and many of the newer regions.

The Feeding Capacity of the Corn Plant.

The first things to be learned are the power which the plant has to gather its supplies of food from natural sources, and the specific effects of different materials upon its growth. Can corn gather its nitrogen from soil and air like clover, or does it, like wheat, require large quantities in fertilizers? Is it especially helped by phosphoric acid like turnips, or is potash more important to aid its growth? Opinions differ widely on these points. There is urgent need of more light upon them. The main question is the nitrogen supply. If, as some prominent agricultural teachers have recommended, farmers must advance from $10 to $15 cash in the spring for nitrogen for an acre of corn, run all the risks of soil and season, and wait until winter for the return, the future of corn growing is not bright. But if, on the other hand, we may omit the nitrogen, apply only the inexpensive mineral fertilizers, reduce the yield but little, have the corn gather the nitrogen itself, feed it to stock, enrich the manure, and help bring up the land, that capacity of this grand staple will go far to establish it in the place for which nature seems to have designed it—next to grass, the sheet anchor of farming in the older States. Is Corn an

"Exhausting" or a "Renovating" Crop.

In the *American Agriculturist*, for April, 1879, I gave results of some special experiments, to test the question of the nitrogen supply. Similar trials were made last season. The results of the two seasons' work are given in the table, in which the plan of the experiments is also mapped out.

The idea was to compare the effects of mineral fertilizers (superphosphate and potash salt), alone, and the same with nitrogen in different amounts and forms. The nitrogen was supplied as nitric acid in nitrate of soda, as ammonia in sulphate of ammonia, as organic nitrogen in dried blood, and in several forms combined in the "Nitrogen Mixture" and in Peruvian guano. In view of the danger of results being vitiated by irregularities in soil or otherwise, the tests of the effects of nitrogen in varying amounts were duplicated in groups III. and IV. and that of the "Mixed Minerals" in VI. and XVI. Suggesting a careful study of the table for details, I give a brief recapitulation of the

Effects of Nitrogenous Fertilizers upon Corn.

As regards the effects of nitrogen in different forms, in 1878, the Peruvian guano brought the

largest increase; the "Nitrogen Mixture" (nitrate of soda, sulphate of ammonia, and dried blood in equal parts) next; then followed, in order of valuable effects produced; nitrate of soda, sulphate of ammonia, and last and worst of all, dried blood.

In 1879, with the irregularities in experiment C, and the positively injurious action of the nitrogen in D, the order of efficiency of the ingredients is altered so that in the average for the two years the sulphate of ammonia comes first, the Peruvian guano second, and the nitrate of soda last. But more trials are necessary to give reliable information as to the action of these materials. The factors of the problem are so multiplex that research will be needed to disentangle and measure them. Estimating a bushel of corn, with its cobs and stalks, to contain 1¼ lb. nitrogen, and to be worth 80 cents, the effects of the nitrogenous fertilizers in these "special" experiments and in the general experiments described in the previous articles, may be summarized as follows, remembering that the superphosphate and potash salt, "mixed minerals," supplied the amounts of phosphoric acid and potash in a crop of not far from 55 to 60 bushels, which would also contain about the 72 lbs. of nitrogen.

In the general experiments the mixture of 300 lbs. superphosphate and 200 lbs. muriate of potash brought on the average of fifty-three experiments, about 42 bushels of shelled corn per acre. The special experiments above seem to me a fairer test of what the fertilizers may do, because, while made in all sorts of weather and on worn-out soils, they were all on soils and in latitudes fit for corn, as many of the general experiments were not. In these, the mixture of 300 lbs. superphosphate and 150 lbs. of potash salt, which can be bought for $8.25, brought on the average 50½ bushels of shelled corn per acre.

The experiments of the two seasons bear unanimous testimony to two things: The corn was helped but little by nitrogen in the fertilizers; and it gathered a good deal from natural sources. The increase of crop and of nitrogen in the crop will appear more clearly if we look at it another way.

EFFECT OF NITROGENOUS FERTILIZERS ON CORN AND POTATOES.

EXPERIMENTS FOR STUDYING THE CAPACITY OF THE CROPS TO GET THEIR FOOD FROM NATURAL SOURCES, AND THE EFFECTS OF DIFFERENT FERTILIZERS UPON THEIR GROWTH, WITH SPECIAL REFERENCE TO THE NITROGEN SUPPLY.

Potash and Phosphoric Acid (with Sulphuric Acid and Lime) supplied in proportions contained in a Corn crop of 50 to 60 bushels. Nitrogen is one-third, two-thirds, and full amount contained in same crop. Amounts of fertilizing materials about as are advantageously employed in farm practice.

A 1878. Prof. J. R. Farrington, Orono, Maine. *Soil.*—Clay loam, heavy, moist, underdrained,—worn-out meadow. *Weather.*—Cold, wet, unfavorable.

B 1878 and 1879. W. I. Bartholomew, Putnam, Conn. *Soil.*—Hill land, dark loam, compact subsoil,—worn-out meadow. Experiment of 1879 on adjoining portions of same fields as experiment of 1878. *Weather.*—1878, favorable; 1879, cold, unfavorable.

C 1878 and 1879. Chester Sage, Middletown, Conn. *Soil.*—Heavy loam, hardpan subsoil,—worn-out meadow. *Weather.*—Favorable. Experiment of 1879, on field contiguous to that of experiment of 1878.

D 1878. Col. J. B. Mead, Randolph, Vt. *Soil.*—Clay loam, compact subsoil. Had oats in 1878. *Weather.*—Cold, backward, very unfavorable.

No. of Plot.	Classification.	Kinds and amounts per acre.	Nitrogen per acre.	YIELD PER ACRE IN BUSHELS. B 1879 Potatoes. Good.	Poor.	Total.	B 1879 Corn. Total.	C 1879 Corn. Good.	Poor.	Total.	D1879 Corn. Total.	A1878 Corn. Total.	B1878 Corn. Total.	C1878 Corn. Total.	Average of Corn Experiments.
1	Partial Fertilizers. To test Effects of Individual Ingredients and capacity of soil. Group I. Valuable Ingredients, one by one.	1. Nitrogen mixture, 150 lbs.	24 lbs	bu. 22	bu. 20	bu. 42	7.4	bu. 42.6	bu. 6.2	bu. 48.8	6.8	19.5	15.1	12.7	20.4
2		2. Sup'phos., 300 lbs. (Phos. ac., 48 lbs.)		40	32	72	36.5	41.0	4.4	45.4	7.0	29.1	39.9	16.5	29.1
3		3. Mur. pot., 150 lbs., (Potash, 75 lbs.		24	32	56	7.7	54.2	4.9	59.1	41.2	32.9	19.1	62.3	37.0
0		0. No Manure		30	16	46	7.7	33.1	6.4	39.5	8.2	20.3	17.7	11.3	17.3
4	Group II. Valuable Ingredients, two by two.	4. Nitrogen mixture, 150 lbs. / Superphosphate, 300 lbs.	24 lbs.	78	36	114	41.4	36.9	4.2	41.1	20.5	37.0	41.9	11.2	32.2
5		5. Nitrogen mixture, 150 lbs. / Muriate of potash, 150 lbs.	24 lbs.	32	20	52	7 1	55 0	3.2	58.2	39.2	42 9	21.1	68.9	39.6
6		6. Superphosphate, 300 lbs., / Mur. of potash, 150 lbs., } Mix min. fertiliz's		81	34	115	42.0	43.6*	2.2*	45.8*	50.2	39.0	43.1	70.3	51.3
7	Group III. Nitrogen as nitrate of soda in different proportions.	7. Mixed min. fertilizers (as No. 6) / Nitrogen mixture, 150 lbs.	24 lbs., — ⅛ Ration.	84	46	130	45.7	57.2	3.6	60.9	40.8	39.8	51.7	84.0	53.8
8		8. Mixed mineral fertilizers / Nitrogen mixture, 300 lbs.	48 lbs., — ⅛ Ration.	108	40	148	46.8	57.6	3.8	61.4	47.6	43.9	47.3	79.7	54.4
00		00 No manure		32	24	56	8.5	40 2	4.4	44.6	7.3	25.5	.....	7.0	19.9
9	Group IV. Nitrogen in mixture in different proportions.	9. Mixed mineral fertilizers / Nitrogen mixture, 450 lbs.	72 lbs.— Full Ration.	88	42	130	42.2	56 4	2.6	58.6	47.5	52.6	47.3	78.4	54.4
10		10. Mixed mineral fertilizers / Nitrogen mixture, 150 lbs.	24 lbs., — ⅛ Ration.	134	32	166	44.0	66.6	7.1	73.7	45.5	48.4	50.0	72.1	55.6
11		11. Mixed mineral fertilizers / Nitrogen mixture, 300 lbs.	48 lbs., — ⅜ Ration.	106	36	142	44.5	31.2†	2.8†	34.0†	38.5	45.5	50.7	83.9	49.5
12		12. Mixed mineral fertilizers / Nitrogen mixture, 450 lbs.	72 lbs. — Full Ration.	116	30	146	39 1	73.8	1.4	75.2	42.5	41.1	56.4	84.6	56.4
000		000 No manure		.....	.....	.....	39 6	4.9	44.5	10.5	.....	.....	.....	10.1	21.7
13	Group V. Nitrogen, ⅜ Ration, in different combinations.	13. Mixed mineral fertilizers / Sulphate of ammonia, 225 lbs	48 lbs., — ⅜ Ration.	112	44	156	40.2	85.6	2.6	88.0	42.8	35.9	58.1	82.2	57.1
14		14. Mixed mineral fertilizers / Dried blood, 450 lbs	48 lbs., — ⅜ Ration.	110	48	158	40.7	62.9	.....	62.9	57.8	44.3	55.0	69 6	55.0
15		15. Peru. guano, "Standard," 550 lbs. / Muriate of potash, 150 lbs.	48 lbs , — ⅜ Ration.	92	40	132	38.5	71.6	.....	71.6	54.6	48 1	55.3	77.5	57.6
16		16. Superphos., 300 lbs., } Mixed min. / Mur. pot., 150 lbs., } fertilizers		86	38	124	36.5	58.8	4.6	63 4	45.9	.....	.....	.....	48.6
17		Farm manure		.....	.....	.....	.....	.....	.....	.....	46 5‡	34.8§	49.8‖	43.3¶	43.6

* These low results are doubtless due to irregularities in the soil. Being so palpably abnormal those of plot 16 are substituted in computing averages. † Excluded from subsequent computations for same reason. ‡ Yard manure, 20 two-horse loads per acre. § Stable manure well cured, 15,000 lbs. per acre. ‖ Hog manure. ¶ Hen manure. The "nitrogen mixture" consisted of nitrate of soda, sulphate of ammonia, and dried blood in equal parts.

Or, from a pecuniary standpoint the results show:

	In Trials. Total Number.	With Nitrogen. Amounts.	Costing.	The Nitrogen paid for itself in trials.	The Nitrogen failed to pay for itself in trials.	The average loss in the several trials was
1877-8	29	24 lbs.	$ 5.62½	8	21	$ 0.90
	15	48 "	11.00	1	14	4.45
	6	72 "	16.50	none.	6	8.51
1879	26	24 lbs.	$ 5.62½	5	21	$ 0.90
	14	48 "	11.00	1	13	9.48
	6	72 "	16.50	none.	6	16.26
1878 and 1879	55	24 lbs.	$ 5.62½	13	42	$ 0.90
	29	48 "	11.00	2	27	7.47
	12	72 "	16.50	none.	12	12.39

The nitrogen increased the crop enough to pay the cost in thirteen trials out of ninety-six. The pecuniary loss rose and fell with the amount of nitrogen used. With mineral fertilizers alone the crop gathered, as is shown by the above estimates, some 65 lbs. of nitrogen per acre.*

As regards the effects of the several fertilizing materials, phosphoric acid took the leading place often, potash occasionally, and nitrogen very rarely. In bad seasons, and on some soils in good seasons, neither material had any effect. The most effective ingredient, as might be expected, depended upon the soil and the season.

Average Results of Experiments of 1878 and 1879.	The crops averaged bushels per acre. 1878, 3 exp'ts.	1879, 3 exp'ts.	1878 and 1879, 6 exp'ts.	The crops contained pounds nitrogen per acre. 1878, 3 exp'ts.	1879, 3 exp'ts.	1878 and 1879, 6 exp'ts.
Special Experiments.						
Mixed minerals alone	50.8	50.6	50.7	67.7	67.5	67.6
do. + 24 lbs. Nitrogen	57.7	51 8	54.8	76.9	68.0	73.0
do. + 48 lbs. Nitrogen	58.4	52.5	55.5	77.9	70.0	74.0
do. + 72 lbs. Nitrogen	60.0	50.9	55.5	80.0	67.8	73.9
General Experiments.	27 exp'ts.	26 exp'ts.	53 exp'ts.	27 exp'ts.	26 exp'ts.	53 exp'ts.
Mixed minerals alone	42.9	40.8	41.9	57.2	54.4	55.8
do. + 24 lbs. Nitrogen	48.6	46.7	47.7	64.8	62.3	63.5

Is Corn in Its Relations to Nitrogen, more Closely Allied to the Cereals, or to the Legumes: To the Grains or to Clover?

One thing detracts from the decisiveness of the experiments. Most of the trials were on old grass land which contained large quantities of roots on which the corn doubtless fed. How well it could provide itself with nitrogen from nitrogen compounds in the soil and from air without the roots to feed upon is not settled. But the trials that have been repeated on the same plots imply that the corn did not depend greatly upon the roots of previous crops for its nitrogen.

The experiments are numerous and decisive enough to warrant the inference that, as corn is commonly grown, nitrogenous fertilizers in any considerable quantity would be rarely profitable. They imply that corn has somehow or other the power to gather a great deal of nitrogen from soil or air, or both, and that in this respect it comes closer to the legumes than the cereals, that it is more like clover than wheat—that, in short, corn may be classed with the "renovating" crops.

A Question for Further Investigation.

Corn is botanically allied to wheat. The cereals, generally, demand large quantities of available nitrogen. But in all these experiments corn makes little response to nitrogen, or is positively damaged by it, and does well with the mineral fertilizers. Why, how, or to what extent the implied conclusions are true I do not presume to say. The subject evidently demands much more thorough study.

Practical Application.

According to the tables in last December's *American Agriculturist*, the several valuations of digestible ingredients that would make the feeding value of a ton of fair hay $11.00, and of a bushel of shelled corn 60 cents, would bring a ton of well cured corn-stalks at $8.00. Reckoning the stalks at only $6.00 per ton and 1¼ ton to the 50 bushels of shelled corn which came with the mixture of 300 lbs. superphosphate and 150 lbs. muriate of potash, the value of the crop for fodder would be $40.50.

Supposing the crop to be fed on the farm, two-thirds of its nitrogen, phosphoric acid and potash, reckoned at prices ordinarily paid for them in equally valuable forms in commercial fertilizers, would be worth $8.50, the cost of the fertilizer. The fertilized crop probably leaves the land in about as good condition as it was before; the manure, well husbanded, more than pays for the fertilizer, and there remains over $40.00 worth of fodder in return for labor and rent of an acre of land. It strikes me that farming of this kind is profitable and practical.

A Word to Our Experimenters.

I wish to warmly second the proposals of the Editors of the *American Agriculturist* for experiments with fertilizers the coming season, and hope that as many as possible may join in the trials, and that those who made them last year will repeat them the coming season.

W. O. ATWATER.

Wesleyan University, Middletown, Conn.

	In number of trials.	With Nitrogen. Amount per Acre.	Contained in Crop of	The average increase of Corn was	The increase of Nitrogen in the crop was
1877-8	29	24 lbs.	18 bushels	5.9 bush.	7.9 lbs.
	15	48 "	36 "	7.6 "	9.1 "
	6	72 "	54 "	9.3 "	12.4 "
1879	26	24 lbs.	18 bushels	5.9 bush.	7.9 lbs.
	14	48 "	36 "	1.9 "	2.5 "
	6	72 "	54 "	0.3 "	0.4 "
1878 and 1879	55	24 lbs.	18 bushels	5.9 bush.	7.9 lbs.
	29	48 "	36 "	4.8 "	5.8 "
	12	72 "	54 "	4.8 "	6.4 "

* I may add that Mr. J. W. Sanborn, Farm Superintendent of the N. H. Agricultural College, has conducted experiments for two years on a similar plan, and, with a smaller quantity of the superphosphate and potash salt, got 37 bushels in 1878, and in 1879, on the same plot, 67⅓ bushels. By the addition of nitrogen, the yield in 1878 was increased, but diminished in 1879, as in the experiment of Col. Mead, of Vermont (D, of the table).

A Cottage for the Country Costing $1,800.

BY S. B. REED, ARCHITECT.

These designs are for a roomy and home-like country dwelling with ample accommodations for a family of average size, and containing some of the most essential of modern improvements....**Exterior** (fig. 1).—The ground measurements are 36 by 41 feet—giving a desirable breadth of base each way. The outlines are irregular, and broken

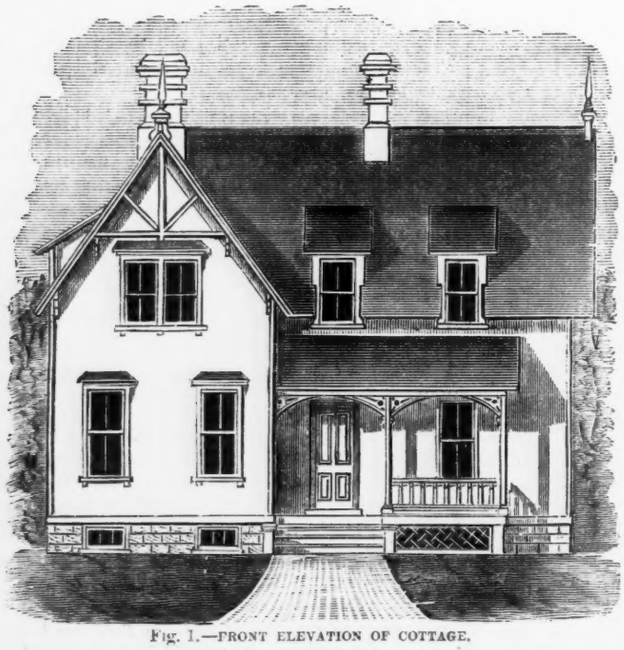


Fig. 1.—FRONT ELEVATION OF COTTAGE.

with sharp, well defined angles, which impart an appropriate rustic appearance, that will be picturesque on a level, monotonous prairie, while it would harmonize with rugged surroundings. There are two pleasant verandas—one in front, and one in the rear of the Living-room. In some localities it would be desirable to extend the front and rear windows of the living-room to the floor, making both verandas directly accessible....**Cellar** (fig. 2).—Hight 6½ feet, and of the same size as the main house, giving abundant room for ordinary purposes. If desired, a solid partition may be made in line with the girder (shown by dotted lines), thoroughly dividing the space at little cost;—and giving a

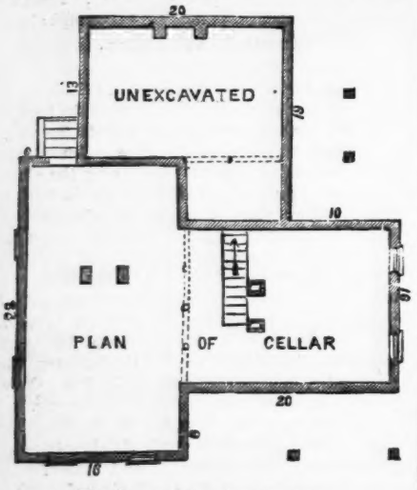


Fig. 2.—PLAN OF THE CELLAR.

"warm cellar" on one side, and "cold" one on the other. There are six small windows, admitting light from three directions, an outside entrance at the rear is inclosed with hatchway doors. Should more cellar space be required, it may be extended under the kitchen while building, at an additional cost of twenty dollars....**First Story** (fig. 3). —Hight of ceilings 9½ feet. The front entrance leads from the veranda to the main hall, which is centrally located, and communicates directly with the four principal rooms on this floor, and contains the main stairs to the second story. Each of the rooms is conveniently situated, and has the necessary windows to admit plenty of light and air. The dining-room and kitchen have each outlooks in three directions, and are arranged to communicate with each other through the pantry, which is thoroughly shelved, and has a narrow window. A door opens from this pantry directly to the cellar stairs, which are under the main stairs. Many prefer such connection between the pantry and cellar for convenience. A large proportion of the stores required for the table, come directly from the shelves and safes in the cellar, and by this plan many steps are saved. The kitchen is conveniently arranged. An outside door opens from the rear veranda. A good sized pantry, *C*, an open fire place, a pump, sink, and a closet under the sink, are provided. The fireplace is suited to the use of a range with waterbacks, placing the boiler at the side of the chimney if desired.....**Second Story** (fig. 4).—Hight in the main house 5 feet at the plates, and following the rafter to the full hight of 8 feet; hight in the wing 2 feet at the plates—to 6½ feet in the center. The roofs are unusually steep, so that a person of ordinary hight will be able to stand erect within six inches of the sides of the principal rooms at their lowest point, making them as useable for chambers, as if with full hight or level ceilings. Each of the principal chambers have closets adjoining the chimneys. One chamber suitable for a servant's room, a bath room, and a store room, are placed over the kitchen. The bath room is furnished with a seat closet and bath tub. An opening with register is placed in the floor at *B*, admitting warm air from the kitchen ceiling....**Construction.**—The foundations are of brick, where stones are not plentiful and cheaper. The walls show 2 feet above the earth grades. The Chimneys are also of brick, having continuous flues from each fire-place and the cellar, and have tops laid in cement mortar. Timber of sawed spruce; siding of pine, "Novelty" pattern. Roof of pine shingles, on spruce lath. Flooring, outside of narrow pine, inside of wide spruce. Plastering three coats and hard finished. The Windows have sash with four lights in each. If desirable the windows facing the verandas may extend to the floor. The sash for these should be similar in every respect to the others. A panel is fitted under the sash and hung to swing like a door. This will be found a very simple and satisfactory method of extending windows to the floor. No special, and, therefore, expensive sizes are required, but all may be of uniform and stock dimensions. When completed they match other windows in the same apartment, in appearance and in their usual operation, and may be readily passed by raising the lower sash and swinging back the panel. Five marble shelves with stucco trusses, are set in the principal rooms. Plumbing is similar to that described in the March *American Agriculturist*, with the addition of bath room fixtures. The veranda roofs are shingled. All valleys and gutters are of tin. The method of constructing these gutters is shown on page 173, May, 1875, *American Agriculturist*. Painting inside and out of pure lead and linseed oil....**Estimate.**—Cost of materials and labor is given with the same figures as that in previous months:

88 yards Excavation, at 25c. per yard	$ 22 00
18,000 Bricks, Foundations and Chimneys, at $12 per M.	216 00
50 feet Blue stone (steps, etc.), at 12c. per foot	6 00
730 yards Plastering, at 25c. per yard	182 50
4,500 feet Timber (as follows), at $15 per M.	67 50
Sills 4x8 in., 170 ft. long. 1 Ridge 2x8 in., 13 ft. l'ng.	
Ties 4x6 in., 170 ft. long. 2 Ridges 2x8 in., 28 ft. l'ng.	
Plates 4x6 in., 112 ft. long. 68 Rafters 3x4 in., 15 ft. l'ng.	
8 Posts 4x7 in., 16 ft. long. 44 Beams 3x8 in., 16 ft. l'ng.	
2 Posts 4x6 in., 12 ft. long. 18 Beams 3x8 in., 14 ft. l'ng.	
Verandas 3x7 in., 60 ft. l'ng.	
100 Joist 3x4 in., 13 ft. long, at 15c. each	15 00
300 Wall Strips, 2x4 in., 13 ft. long, at 12c. each	36 00
450 Shingling Lath, 1¼x2 in., 13 feet long, at 6c. each	27 00
70 bunches Shingles, 18 in., at $1.25 per bunch	87 50
260 Siding, 9½ in., at 28c. each	72 80
Cornice materials	39 00
242 Flooring, 9 in., (inside), at 28c. each	67 76

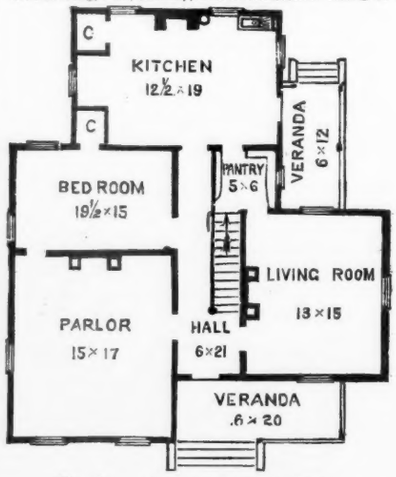


Fig. 3.—PLAN OF THE FIRST STORY.

48 Flooring, 4½ in., (outside), at 25c. each	12 00
2 Stairs, Principal and Cellar (complete)	40 00
6 Cellar Windows (complete), at $3 each	18 00
19 Plain Windows (complete), at $7 each	133 00
5 Dormer Windows (complete), at $10 each	50 00
22 Doors (complete), at $6 each	132 00
5 Verandas, finish (complete)	40 00
5 Marble Shelves (complete)	25 00
7 Closets, finish (complete)	15 00
4 Kegs Nails, $20; Plumbing (complete) $120	140 00
Carting, $20; Painting, $125.50	145 00
Carpenter's Labor (not included above)	175 00
Incidentals	44 94
Total cost	$1,800 00

Exhaustion of the Soil.—A Subscriber in Indiana writes: "A great many farmers in this section, believe that wheat will never exhaust the soil. They claim that they have kept wheat on the same ground for a series of consecutive years, with good results, etc." The mineral portions of the plant—the potash, phosphoric acid, magnesia, lime, iron, etc.,—must come from the soil, and are taken up in a state of solution by the roots of the plants. These substances are deposited in the plant, and if they are removed from the soil in the form of grain,

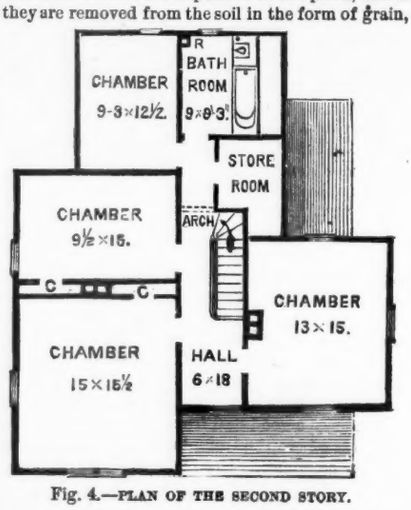


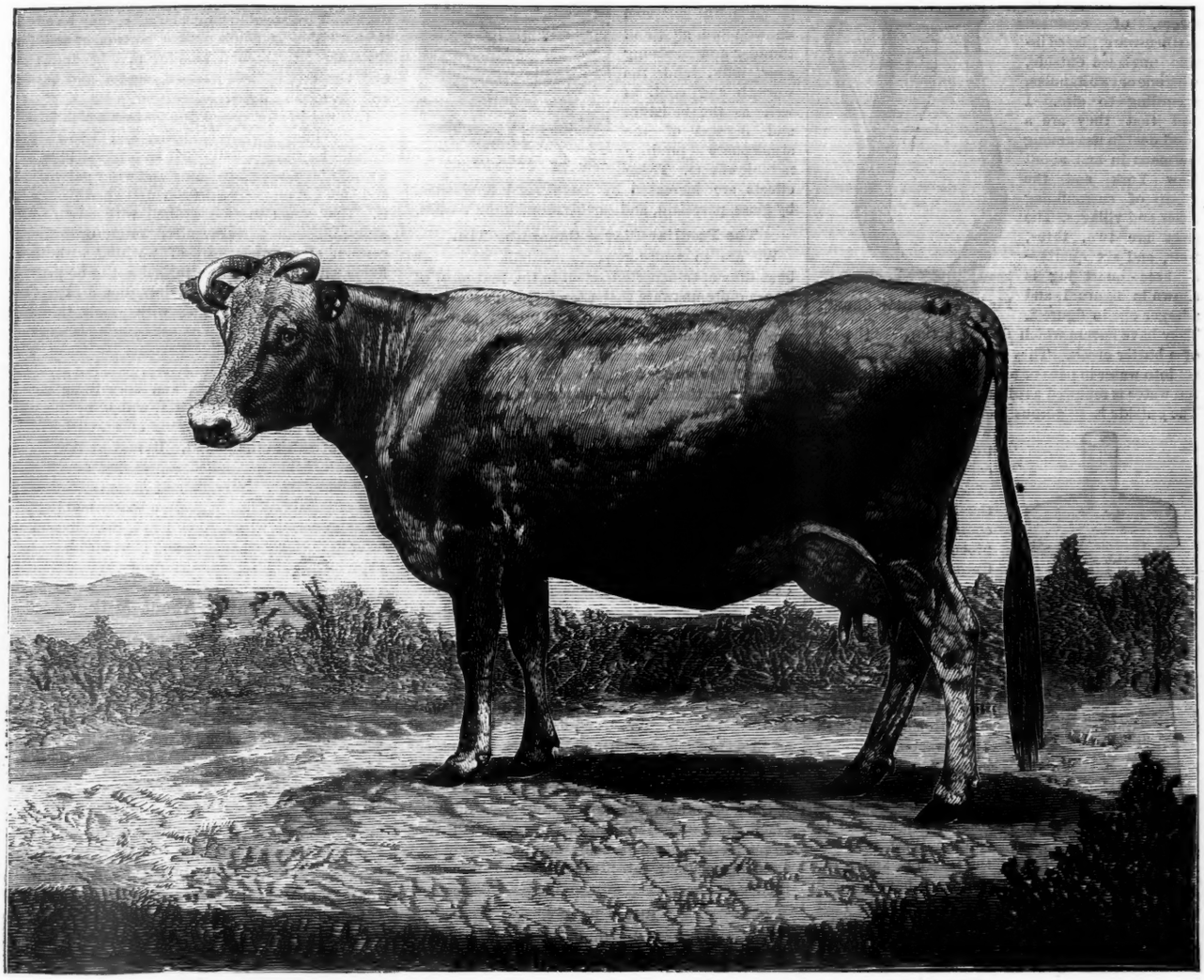
Fig. 4.—PLAN OF THE SECOND STORY.

straw, or any other crop, the soil loses just so much of these essential ingredients of plant growth. If there is a continual outgo, and no income in the form of manure, or other fertilizer, it is only a matter of time for the richest soil to become poor in plant food, and it will fail to produce remunerative crops, and the soil is then said to be exhausted, or "run down." There is no reason why the wheat plant should not tend to exhaust any kind of soil.

The Famous Jersey Cow "Alphea."

The credit and fame of breeding such a cow as "Alphea" the daughter of "Saturn" and "Rhea" ought, we think, to be about as great a satisfaction as to be the producer of that miracle of mechanical art and automatic performance; the Hoe Press.

There are few of our readers, who do not know something of "Alphea"; all such, and others not



THE MOTHER OF THE ALPHEA FAMILY OF JERSEYS, "ALPHEA" (171).

less, will be interested in the beautiful portrait, from an instantaneous photograph by Schreiber & Sons, of Philadelphia, which we present herewith.

"Alphea" was a beauty, regarded either from a purely æsthetical standpoint, or from the more practical one of "handsome is that handsome does." Of still more importance her qualities did not die with her, when in her full prime she sickened and died of an inflammatory disease in no way connected with her extraordinary milk and butter production, but they live in her descendants to whom she imparted to a greater or less degree both vigor of constitution, and a butter-yielding ability.

"Alphea" herself came from the crossing of two animals of similar characteristics, imported by Col. R. M. Hoe, of New York and Morrisania, N. Y., and inherited a most excellent constitution. She was of a color called solid dark fawn with black points—that is, brown of various shades running into nearly black and shading off into light French gray, changing also somewhat with the season of the year. As may be seen from the engraving, she had the characteristic wedge-form of the best milch-cows, light in front and heavy, inclining almost to coarseness, behind. Her head was delicate and the horns light, and incurved, yet the muzzle was broad, and this important and useful feature, as shown, indicates full capacity for effective work. She was, as might be supposed, a good feeder; no cow can give milk in such quantity and of such quality as hers without an abundance of food and ability to digest it. "Alphea's" milk and butter record depend entirely upon the testimony of Mr. Geo. W. Harris, who was Superintendent of "Brightside"—Col. Hoe's beautiful residence and farm in Morrisania, now within the limits of the City of New York. During the greater part of the season through which the tests extended, Col. Hoe was in Europe, hence the matter was left entirely to Mr. Harris. This was in the year 1868, and in a recent article in the "Country Gentleman," by "Hark Comstock," it is stated that Mr. Harris' reasons for not himself publishing the extraordinary record were that the tests were not made in the usual way, and special explanations would need to be made. His explanation is entirely satisfactory to any one who knows either Mr. Harris or Col. Hoe, who gives Mr. H. his confidence, and leave no doubt on the record.

A statement of the yield was made in the October number of last year, page 381, which, we believe, was the first publication of the facts. Doubt was cast upon the statement in certain quarters, but the most rigid scrutiny, as made by the author of the article in the "Country Gentleman," confirms the statement then made. There seems to be no doubt that "Alphea" during this season yielded from 24 quarts of milk a day when fresh, down to 20 and 18 and less, while these tests were being made. The churn in which the milk was churned, and the whole milk was used every time, held conveniently 18 quarts, and this amount well averaged was churned every time, and the yield of butter was in no instance less than 3 lbs. This would make the yield 4 lbs. a day while she was giving 24 quarts of milk, which, it requires very little calculation to see, is the remarkable total of 28 lbs. a week.

This has never been claimed—the writer of the articles entitled "Among the Farmers" claimed 22 to 24 lbs. per week, "Hark Comstock" claims 25, but we see no reason why the old cow should not have the full meed of her wonderful record, and be set down as leading the World of dairy cows, with the astonishing record of 28 lbs. of butter per week.

"Alphea" bred to her own brother, "Jupiter 93," produced a line of fine looking, good-constitutioned cows and bulls which have been rather closely bred together, with now and then a promising out-cross.

Among the Farmers.—No. 52.

BY ONE OF THEM.

"More Nice than Wise."

Can one be "more nice than wise" about milk? There is a satisfaction in being very particular, and fastidiously nice and neat in personal habits, about what one eats and drinks, and all that, but we can carry the thing too far for our own comfort, and for those around us. One of my neighbors will buy no article of food a second time, at a store where the salesman wets the finger in the mouth to pick up the wrapping paper more easily. He is shocked at the idea of carrying off another human being's saliva; and yet my friend will sit in a crowded rail-car or room, and breathe the vital air second-handed, by the hour.—While it is well not to be too nice about some things, in the matter of milk, I think there is the highest wisdom in extreme niceness.

Earthen, or Tin, Milk Vessels.

I fancy I can tell the difference in the taste of milk set or kept in earthen or glass, and that set or kept in tin; nay, I do not think it is a fancy or a piece of "fast-idiocy"—as a jocose friend would say, as he once remarked he was no "fast idiot."

I found in use on Col. E. S. Sanford's farm, last summer, some curious milk vessels. They were wide-mouthed jars, or ewers, of common earthen-ware, glazed inside, unglazed outside, with one or two handles, according to size. I find that they are a good deal in use among Germans in and about New York and the group of surrounding cities and villages. The sizes are two, three, four, and six quarts—a three-quart jug is shown in figure 1, and a larger one in figure 2. They have covers which fit into a rim like the lid of a butter crock. They are filled with milk and set into water in pans or tubs—or other crocks—and the water is renewed as often as may be convenient. The outside is so porous that the water, if it once wets the surface, is continually drawn up by capillary attraction. It of course evaporates all the time, thus notably cooling the milk. I procured some of these German milk crocks, and found them excellent where one has but a few quarts of milk—but we were disappointed in the degree of coolness produced. I am satisfied that for some reason, milk will keep sweet much longer in earthen than in tin vessels. When travelling at the West—I mean what we used to call the West, properly the Interior—and at the South, I have noticed coarse earthen pans with flat rings, quite thick and heavy, covered with a dark clay glaze. Upon inquiry I was surprised to find that they were milk-pans, in fact—except among people of New England or Eastern origin—the common milk-pans of the country. I sketch one of them (fig. 3) from memory, and a stack of them in figure 4, to show how solidly they pack. They are, I should say, 5 inches deep and hold, when filled to the proper hight, from four to six quarts.

Fig. 1.—A GERMAN CROCK.

Fig. 2.—CROCK IMPROVED.

Very neat milk pans, made of yellow or white ware, are sometimes used and are by far the best round shallow pans. They are called by the trade "nappies," and are round or oval, shown in figures 5 and 6. The convenient sizes hold 4 to 6 quarts; the 8-quart ones are heavy to handle. The round ones with a lip were formerly made extensively for the southern trade, but less so now. Square dishes of the same ware are called "puddings;" they are rectangular with somewhat rounded corners, and in common use as pudding dishes, but are admirable milk-pans when small quantities of milk only are kept. After the milk is two days old, in ordinary weather, the cream may be loosened from the sides of the pan and slipped off from the skim-milk by a dexterous movement, with greater ease than from pans of any other form. See the process in figure 7.

Fig. 3.—AN EARTHEN PAN.

It must not be overlooked that there is little lost room on shelves or tables where these pans are placed. Cream is often "slipped" from round pans of both tin and earthen-ware, but a good deal of milk is liable to go with it. The influences of the weather on milk are well known; we all think thunder and lightning sour milk, and the warmth and cold, as well as the moisture and dryness of the atmosphere produce notable effects. These effects are increased by metal, and diminished by glass, porcelain, and earthen-containing vessels.

Fig. 4.—STACK OF PANS.

The Peculiar Flavor Caused by Tin.

We are so accustomed to use milk which has been drawn, transported, or set in tin, that most of us are quite unaware that a foreign flavor is almost uniformly imparted. Perfectly bright, new tin, probably imparts no perceptible flavor, but that which has been somewhat worn, scratched, or scoured, flavors the milk at once. It is fair to conclude, then, that it is the iron and not the tin which gives the flavor; for where the iron is laid bare, from any cause, it is this and not the tin which is primarily acted upon by the acids of the milk. The least action causes the formation and disengagement of hydrogen, which, either by itself, or in the form of some of its many compounds, of which I know little, I believe is absorbed by the milk and imparts a peculiar flavor. This taste is more perceptible in skimmed milk than in the cream—if it be at all observable in cream and butter.—I do not at present know of any reason why the so-called

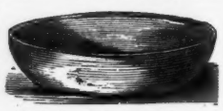


Fig. 5.—ROUND NAPPY.

Fig. 6. "SQUARE" NAPPY.

Granite Ware,

if the glaze which covers the iron basis does not crack and does not contain lead in such quantity as to render the glaze partially soluble, should not form an excellent substitute for both tin and earthen-ware for setting milk, and other milk vessels.

Bitter Butter.

Few persons will be troubled with bitter butter after this article is before the readers of the *American Agriculturist*, because grass feed, fresh cows, and the season of the year prevents its occurrence. My attention has, however, been repeatedly directed to the subject the past winter, and I am certainly inclined to favor the view that the bitterness arises from the milk which separates from the cream after skimming, and which is usually churned with it. It has been repeatedly suggested that this milk or sour whey should by all means be drawn off before churning; but I do not recollect that the

Fig. 7.—SLIPPING THE CREAM.

Washing of Cream

has ever been recommended. I have proved that it is easily done in this way: one may draw off the milk from the stone cream-crock—like the one shown in figure 7—or from any other cream vessel; add an equal quantity (or say, a portion equal to one-fifth of the cream), of skimmed milk, and stir the whole together. This may stand awhile, and be drawn off before churning, and more may be added if one wishes to churn with a portion of milk, or the milk of the second washing may be drawn off and the cream then *cleansed*, *washed* and *rinsed*, and churned by itself.

This washing of cream is a matter which I have experimented with very little, and know little about. So far as I know it is an original idea, and I would be glad to have older and wiser dairymen—and I am not properly a dairyman—experiment with it. That cream may be washed with sweet milk, sour milk, whey, buttermilk, water, or brine, is certain. What the effect of washing with these fluids will be upon the butter has yet to be proved, so far as I am aware. I certainly should expect the best results from washing with sweet skimmed milk, water, or brine. The use of brine is strongly favored by a very sensible Vermont dairyman, with whom I was recently conversing. He is a great advocate of brining butter, and uses three strong brines in preparing his butter, which, by the way, he finds to add the equivalent of a quarter of an ounce of salt to the pound. It may be that he regards the brine as applied to washing cream with too great favor. Nevertheless brine is the butter-maker's sheet anchor in modern butter-making, and I see no reason why it should not answer—and answer well—for washing cream. Thus far I have only experimented in the use of skimmed milk and water.

Something About Milk.

The following remarks, abstracted from a foreign scientific journal, are applicable to this meridian, and may be useful to producers and country users of milk, as well as to consumers who live in cities.

First of all, it should be understood that a hard service is required of milk. Nearly the whole of the vast demand made upon it by civilization is outside of its natural functions, and is—so to say—rather unfair treatment of a very sensitive nature, for *Nature* never designed milk for exposure to the air, or for much variation of temperature. It was intended to be taken directly from the fountain. It is what chemists call a *transition compound*, therefore, changeable and transitory, and requiring delicate handling. It comes directly from the blood, which is very similar, it naturally passes, without delay, exposure, or appreciable change of temperature, from the body of the parent to that of the offspring, there to be immediately converted to blood again, and so used in growth and sustenance. How can we expect that such an exquisitely delicate compound will not occasionally resent outrageous changes from heat to cold, and cold to heat, and the ruthless joltings of transportation and contact with air of every degree of impurity?

To refer only to the latter, which is probably least understood. Almost everything is capable both of giving out and of imbibing *effluvia*, or vaporous compounds, which are often quite beyond the reach of chemical estimation. Probably but few persons outside of scientific circles are aware that it would be next to impossible to devise a compound liquid more susceptible to effluvial influences than fresh milk. It possesses a slight and agreeable effluvium of its own; and also a wonderful aptitude for receiving and retaining that of every sort of volatile matter approaching it. Oily matters promptly take up odoriferous principles of every kind; the microscopic globules of the rising cream, in their state of minute subdivision present a large surface, absorbing with extreme avidity. When the milkman leaves the daily supply of, we will suppose, pure milk, this is what is likely to happen to it in England, according to our narrator:

"It is poured at once into a clean earthenware jug." [The Englishman means *pitcher*, but a fashion

only about fifty years old has substituted the word jug for pitcher so largely, that few educated Englishmen know, as we do, what the two words denote in our common English language]. "This is stood [he means set] say on a stone shelf in the larder, to keep it cool and free from taint. Its companions there are a joint of cold meat, in its gravy, a few unfinished tarts, a large bowl of scrap bread (with incipient fungoid growth), a couple of dozen of eggs,not all fresh; underneath, the cheese; overhead, a jar of onions in pickle; in the near distance, a few head of game in an advanced state of

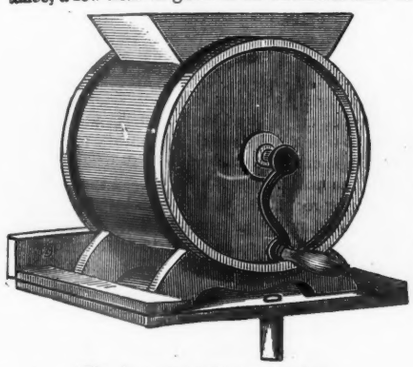


Fig. 1.—THE CHURN IN PLACE.

——well, 'keeping,' and last, not least, a closed window. Now, what is the action hereupon? A thousand to one the temperature of the milk when received is different from that of the air, whether higher or lower. As soon as it comes to rest the surface next the air becomes warmed or cooled, as the case may be, and by giving place to other portions, sets up a series of gentle currents, by means of which every part of the fluid is successively brought into contact with the air, and its countless crowds of butter-corpuscles, containing fatty matter in a high state of subdivision, are enabled to expose the greatest possible extent of surface. Now, it is scarcely the fault of that milk if, in ten hours' time, it has failed to lay by at least a trace of every shade of effluvium which has had a chance of circulating near it. And yet, when the pardonable nastiness of that milk is commented upon at breakfast, there will not be found wanting some one to exclaim: 'What *can* those people feed their cows on?'"

To Fasten Down a Churn.

Mr. E. A. Cooley, Sonoma Co., California, sends sketches of a handy device of a pattern in frequent use, for fastening a churn to its place upon the

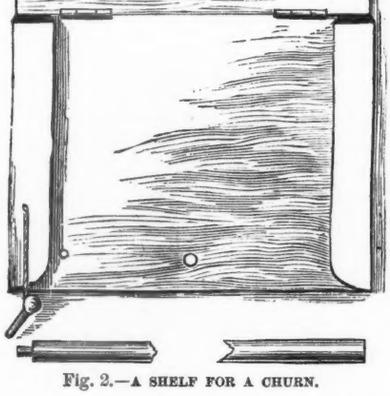
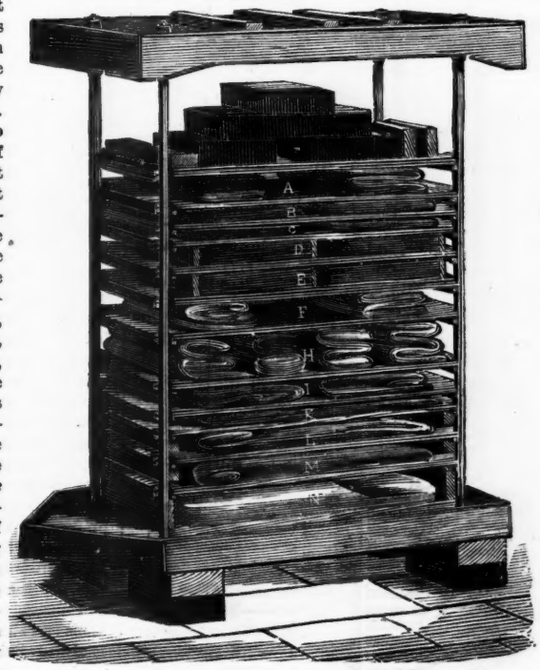


Fig. 2.—A SHELF FOR A CHURN.

table while in operation. "To make it, two cleats, beveled on the under side, are nailed to a board in such a manner, that when the churn is slipped in place, its feet will closely fit under the cleats, and be held by them." The arrangement of the cleats of course will depend upon the size and kind of the churn. In Mr. C.'s case, it is as shown in figure 1. "For convenience, we have the arrangement hinged to the wall, and supported by a movable standard," which is shown in figure 2. The table when not in use, hangs against the wall, and is entirely out of the way—the movable standard, which reaches from the floor to the shelf, may be kept from going astray by providing it with a cord, which keeps it always at hand when the table is desired for use.

Butter Making Without Churning.

Probably most of our readers have heard of the method of making butter by placing cream in a bag of some close fabric, and burying it in the ground. When the bag has been buried for 24 hours, it is taken up, and the contents are found to be converted into butter, which only needs washing to be ready for use. In this case the bag is subjected to the pressure caused by the weight of the earth upon it, which forces out the liquid portions of the cream, that are at once absorbed by the surrounding earth. Acting upon the principle that simple pressure within a close fabric is sufficient to separate the butter globules from the liquid portions of the cream, a Prussian lady, Mathilde Ziemann, of Quedlinbourg, has invented a press for the purpose, and also to remove whey from the curd, in the making of cheese. As this method of butter-making is attracting much attention abroad, we give our readers an engraving of the press, from the *Journal d'Agriculture Pratique*, with an abstract of the account there given. As the making of cheese by pressure presents nothing new, save the pressing the curd in thin layers in bags, we omit that use of the press for the present, and describe the method with butter. The press consists of a base, sufficiently inclined for liquids to run off, from which arise four iron rods supporting the top. Press-boards, or shelves, are provided with notches at the corners to receive the iron rods, upon which they move up and down. These boards are about 3 feet long, and half as wide (really a metre=39 inches; the precise size is not important). A supply of strong linen cloths about a yard long is required.

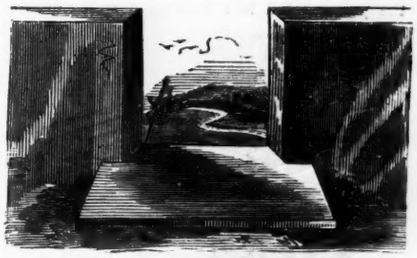


A PRUSSIAN BUTTER, AND CHEESE PRESS.

Two cleats to each board, to raise it from the next 1¼ inch, and four frames 16 inches square, and 2¼ inches high, are necessary. One of the pieces of linen being well washed, is laid over one of the frames, and about four quarts of cream is turned upon it; the cloth is then carefully folded in such a manner, that the cream is completely inclosed; it is then placed on the press (as at E. D.), where it remains without any pressure for 10 or 12 hours. At the end of this time, the cream will be found to be solidified, and the cake may be removed from the frame, and put in press between the upper boards C; afterwards it is put between the boards at B, which are separated by a cleat for 1¼ inch. Lastly, the cloth being folded several times upon itself, is placed at the highest board, where a number of bricks or other weights are used, to give sufficient pressure. At the end of two days, all the butter that the cream contained, will be found in the cloth. Nothing is said in the article as to the after treatment of the butter; in Europe salt is rarely used. In making cheese, the curd is placed in bags, and after some hours, these are folded, and the pressure continued as seen in the lower part of the press, both operations, butter-making, and cheese-making, being carried on at the same time. One of the chief advantages claimed for this method of making butter, is the avoidance of loss; in churning, a large number of butter globules remain in the butter milk, which have escaped the operation. The German authors claim, that the yield of butter is increased by 10 per cent. Another claim is, that the water is much more completely separated, and that on this account, butter thus made, will keep much better than that made by churning. It will strike most butter-makers, that this process has one marked fault—the length of time during which the butter is exposed. Nothing is said about quality, but we should expect that it would not be improved by two days' exposure. On the other hand, the linen cloth, having its pores filled with liquid, would pretty effectively exclude the air. Another thing will strike a practical person, which is, the great amount of circumstance, and needlessly cumbersome appliances to accomplish the end in view. If butter only is to be made, two or three boards, and the necessary weights, would answer quite as well as the press. The process is a very simple one, and it will be an easy matter for any one to test its efficacy. The article referred to, places much stress upon the importance of carefully washing the linens, and recommends that they be soaked for some hours in water, to which some Sal-Soda has been added.

An Irrigating Gate.

A head-gate for lateral irrigating ditches, may be made very simply, by cutting out a piece of the middle of an inch board with a bevel cut, the slope of the cut being outwards, towards the lower, or down-stream side of the board. This is necessary to give a perfect clearance to the stream, and avoid adhesion of the water, which would lessen the flow. The board is built in the bank, and a foot-



A FLUME GATE.

piece is fastened under it, as shown in the engraving, to prevent the stream from working under the gate. The lower edge of the board and gate should be below the level of the ditch, and the board should be long enough to prevent the water from cutting around the ends of it. As a very small leak in water channels, will soon become a large one, if not guarded against, care should be exercised to avoid all danger of washing around the gate and joints in irrigating ditches as well as in dams.

Corn Markers are of nearly all sizes and shapes; but may be divided into two general

classes; those which make the marks with runners, and those that have pegs of some sort, which are drawn through the mellow soil. It is not necessary for us to decide which of the many home-made kinds is the best; but it is evidently the one that makes the best marks in the quickest time, and with the greatest ease. One drawn by two horses, which makes several marks or rows at a time, and permits the driver to ride, is certainly useful in large fields. We now only suggest here, that whatever kind is to be used, it should be looked to, and put in readiness for the work it is to do.

A Barn Corn Crib.

On small country places, a multiplicity of buildings is neither economical nor desirable. A corn crib, however, is a necessary evil, and it may be provided for with much advantage, in a corner of the barn. An extra building is thus dispensed with, and the corn is where it can be reached very conveniently. The crib may be built in the corner of a barn, figs. 1 and 2, on the upper or lower floor, as it is the most convenient, and the wall may be opened and fitted with lath work, and protected by falling

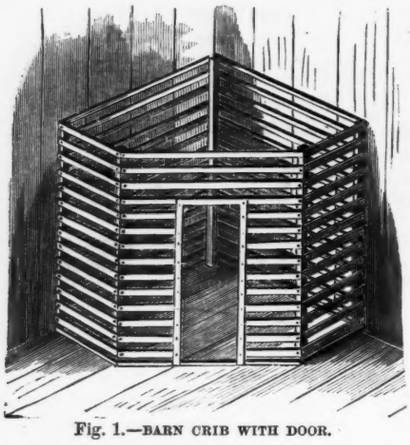


Fig. 1.—BARN CRIB WITH DOOR.

shutters when necessary, as in figure 3. When the corn is thoroughly dry, the shutters may be closed.

Are Pigs or Shoats Best for the Villager?

To the farmer who raises his own swine for fattening, and keeps over what he cannot sell, there is not much choice. It is his custom to fatten what he has on hand, and those are very often fall pigs when the sale is rather dull. The villager always buys the stock he wants to make pork of, and can generally put in his pen either wintered swine or spring pigs. Some always keep one or two pigs in the pen, and kill in the fall, and spring, putting

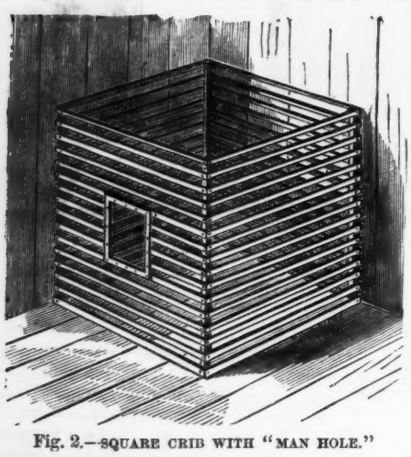


Fig. 2.—SQUARE CRIB WITH "MAN HOLE."

only pig pork into the barrel, and using only pig hams and shoulders. The great objection to this course is the increased expense and trouble of making pork in the winter, in all northern climates. It takes a great deal of food to keep up animal heat in frosty weather and adds twenty-five per

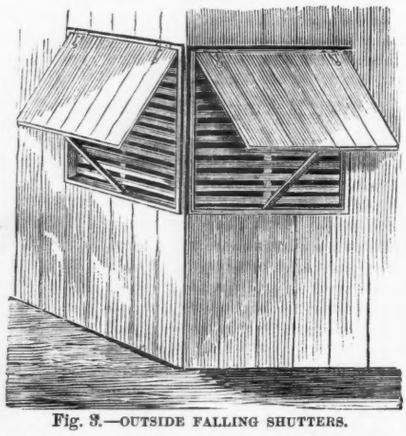


Fig. 3.—OUTSIDE FALLING SHUTTERS.

cent to the cost of making pork and hams. When made they are no better than the summer made meats. The waste of the kitchen may better be fed to poultry than to swine, and there is no economy in keeping pigs to save these wastes. Others make better calculations, and buy pigs or shoats, as suits convenience early in spring, and feed all the pigs will consume until November, when they slaughter them in the first hard freezing weather about Thanksgiving. The choice between pigs and shoats depends mainly upon the prices. At the same price per pound shoats are generally preferred. But not infrequently they are much cheaper from the supposed superiority of pig pork. But there is not much foundation for this distinction, for the wintered pig weighing 80 to 100 lbs., and slaughtered at Thanksgiving, makes as nice hams and shoulders as the spring pig. His frame is already built, and other things being equal, the food consumed will give a larger amount of flesh. The hams will be larger, the pork thicker, the lard more abundant, and on the whole more desirable for family use. There is no difficulty in supplying all the hog products needed in a family; pork, salt and fresh, ham, bacon, sausages, and lard from the summer fattened shoat. With pigs, the hams and lard often give out long before killing time. Whichever are selected, feed regularly and abundantly all that they will consume. A squealing pig disturbs the whole neighborhood, and at the same time impeaches the wisdom of the owner.

The Distribution of Labor on the Farm.

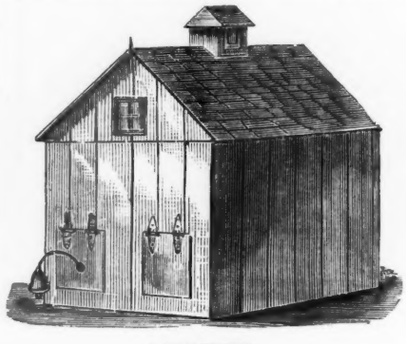
There are about as many kinds of farm management as there are kinds of men. To a certain extent this is natural, because there are so many different products of the farm, almost any one of which may be taken as the primary, and all the others thus become of only secondary importance. If butter is the leading "crop," the system of the farm will be of one kind; if wheat is the primary product, the methods pursued will be different from those for butter, and this again will not be the same as when sheep are the main source of the farmer's income. Circumstances of soil, climate, nearness to market, personal tastes, etc., will decide these matters. But whatever the system, whatever the leading crop grown—and we by no means believe that in all cases, or even in most cases, it is always better for a farmer to have a crop that is *the* leading one—there are certain general principles that should be binding upon one so soon as he becomes a farmer. He who by the soil would thrive, no matter what he is to make that soil produce, should so plan his work that there will be the least number of idle days, in fact, this means that there should be no days when the farmer has, as the common expression goes, to "kill time." Every worker of the soil, whether he owns or rents the soil, and is, therefore, working for himself, should put a definite market value upon his labor. This very many farmers fail to do, and overlooking this important fact, it easily and naturally becomes a source of loss. It is as much to the farmer's advantage to have a full supply of labor for each and every work day, as for the day hand that gets his living from his daily labor.

The vital importance of the proper distribution of farm labor throughout the season—yes, the whole year—being accepted as a leading fact in profitable agriculture—the question is, how to make the most of it? In the first place it demands a careful planning of the whole season's work, if not the work for several years. This plan should account for work for not less than 290 days in the year—and the work of each of those days should be of such a character as to pay—not work to be done for the sake of doing something, but seasonable, profitable labor. This principle at once points towards a variety of farm crops, mixed farming, a rotation of crops, the ideal farming, and the one towards which substantial agriculture is tending.

A single example will suffice to illustrate and enforce the point. Let it be supposed that a farmer is growing roots, and that it is to his advantage to have the labor of the care of his roots distributed along through the season. Instead of putting his whole land into Swedes, and that in early summer when other labor is pressing, he can sow a portion of the land to Mangels as early as the ground can be worked, and later, after the Swedes are in, a part of the field may be put into Flat Turnips, which grow rapidly and must be fed so soon as grown. If soiling is practised the Flat Turnips may follow the early rye in July. In like manner there are many cases where the work that would otherwise come "all in a heap," can be distributed through the season, and "all hands" can be kept for several months and furnished with steady and profitable labor. The farmer who can best equalize his work and portion to each week and month its part, other things being equal, will be the most successful.

A Farm Dog Kennel.

A correspondent from Morris Co., N. J., sends a sketch of a dog kennel, which is far more comfortable for the tenant than is usual with such buildings. It is common for the dog to be used as a homeless vagabond, and to be left to find shelter as he best can on the lee side of a fence, or in a hole under the barn. The dog may have sagacity enough to know when he is well or ill treated, and he may very reasonably lose his self-respect, and take to evil courses, such as prowling abroad, marauding and sheep killing, when not taught better, and provided with decent quarters at home. The conduct and attitude of a hardly used, half starved cur, is entirely different from that of a well fed, and decently kept dog, and every one who keeps a dog, should certainly take pains to treat him well, and train him respectably. A shelter of some kind should be provided, which the dog should recognize as his home, and the more comfortable this is made, the more contented and home-

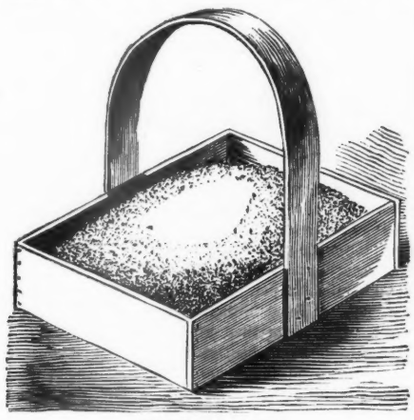


A DOG-HOUSE.

keeping he will be; not to speak of the freedom from disease and vermin to be enjoyed. The kennel here described, is 7 feet long, by 3½ wide, and has two doors, one opening inwards, and one outwards, the latter door is provided with a bell, by which the owner can tell when the dog goes out at night. In summer one door may be raised for ventilation, but in the winter both should be let down.

Salt for the Live Stock.

There are some who claim that the well known liking of our domestic animals for salt is due to education, that it is an unnatural appetite, that in a state of nature animals do not have salt, and assert their belief that it does more harm than good. It would be a sufficient answer to these persons that our animals are not in a state of nature, and what the pre-historic cow and horse had, or did not have, has nothing to do with what shall be given to their descendents. Those who



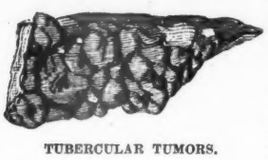
A HANDY SALT DISH.

write and talk so earnestly against salt are not many, and are usually people of notions, which they mistake for ideas. The great majority of cattle raisers and farmers are fully convinced that salt is necessary for the best health of farm animals, and practice what they believe. The amount of salt required is small, and it should be given at frequent intervals. If a little could be given each day it would be best, and if with the food, as we are accustomed to take it ourselves, it would be so much the better; but such a method is hardly practicable. Supplying salt once a week will answer, and this is the usual interval between saltings, if salt is given at all. Some special day or time in the week should be chosen as that for salting the domestic animals, and then it should not be allowed to go past without dispensing, what some one has termed, the "seasoning of the week."

An engraving of a handy salt dish is given herewith, which, simple as it is, better answers the purpose than any other that we have used or seen used. It consists of a low box made of hard wood with a thick bottom, and a handle made of hickory—a piece of heavy barrel hoop will do—nailed upon the sides as shown in the engraving. In dispensing the salt to stock in the open field, it should be so placed that all the animals can get their fair share, and again it should not be thrown upon the ground where it is largely lost, or if eaten it must be with a quantity of earth. Flat troughs should be provided even for economy's sake.

Scrofulous Diseases in Domestic Animals.

An observing friend had a fat cow slaughtered, and finding in the lining of the cavity of the abdomen a large quantity—nearly a bushel—of strange objects, sent one of them, which is shown in the engraving. It proved to be a collection of Tubercular Tumors, of a kind often found in animals inclined to scrofular diseases. They are due to a constitutional disease that is too widely prevalent in all kinds of our domesticated animals. Scrofula may be inherited, or it may be developed by the conditions of life that have an influence in lowering the vital powers—such as protracted derangement of the digestive organs, however caused—deficiency in the quality and quantity of food, impure water, damp, filthy stables, defective ventilation, exposure to cold and wet and other unsanitary conditions. Animals in confinement are more liable to scrofulous disease then those of the same kind in a state of nature. Dr. Aitken says: "The stabled cow, the penned sheep, the caged lion, tiger, or elephant, are almost invariably cut off by scrofulous affections, no doubt due to deficient ventilation, and the abeyance of normal exercise of the pulmonary function." When the constitutional defect is inherited, the ordinary exciting causes of disease are liable to develop it, and it may assume a variety of forms according to the organ where the disease is localized. The heredity of the disease is often not suspected from the varied forms it assumes in different generations. The lungs of the parents may be affected when the disease is known as consumption, and the offspring may be affected with scrofulous swellings, marasmus, or wasting—or chronic bowel complaints. The disease may not show itself in the acute form for several generations, and may be even unsuspected until after death, when it may be recognized by tuberculous tumors that, as in the case under consideration, have not reached the stage to produce serious constitutional derangements. A careful selection of breeding stock should be made to avoid any hereditary tendency to the disease. When fully developed, the acute scrofulous complaints do not yield to any treatment, but run their course with the most unfavorable results. Prevention, by the observance of the best sanitary conditions, is the only means of counteracting the constitutional defect. We cannot too strongly insist upon pure air furnished in abundance to all of our domestic animals confined in barns, stables, etc., and fresh water and wholesome food at all times and places.



TUBERCULAR TUMORS.

A Manure Sled.

A sketch and description of a manure sled comes from H. H. Cooper, Lancaster Co., Pa., who thinks is "the handiest and cheapest sled he has ever seen." It is very simple in its construction, as

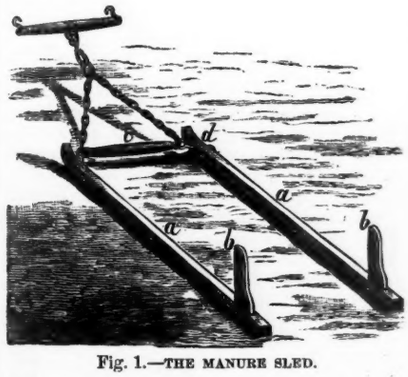


Fig. 1.—THE MANURE SLED.

shown in figure 1. The runners, *a*, *a*, can be of any desired length from 4 to 6 feet, and may be made of 3 by 4 pine scantling. The upright pieces, *b*, *b*, set in loose sockets in the rear ends of the runners, and can be easily removed. The chain for the attachment of the whiffletree is secured to the forward ends of the runners by staples put in at an angle of 45 degrees. The ends of the two runners are kept about 20 inches apart, by means of a spreader, *c*, placed between, and fastened to the ends of the chain. The manure is loaded upon these two runners, being piled up in a rather narrow ridge, (fig. 2). When the place is reached where the manure is to be deposited, the two standards, against which the manure is pressed somewhat tightly, are removed. By starting the horse the sled is drawn from under the manure and the sled is empty, and, with the standards replaced, it will be ready for another load. "There is no trouble in turning as with the common long sled, and no second handling of the manure, to say nothing of the cheapness and simplicity of the arrangement." We are not aware that this simple farm implement is patented.

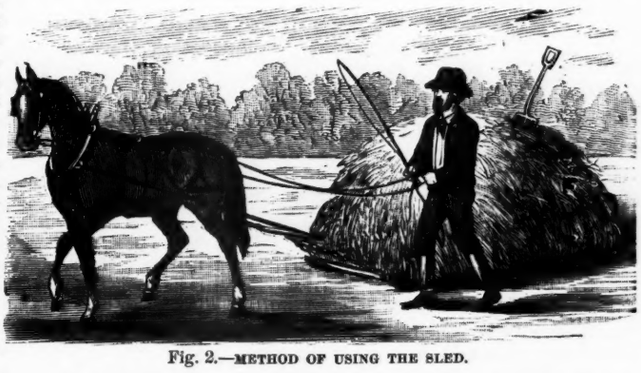


Fig. 2.—METHOD OF USING THE SLED.

Handle for a Cross-Cut Saw.

Mr. E. M. Goodale, York Co., Me., sends drawings of a handle for a cross-cut saw that is coming into very general use in that locality. The handle, as shown in figure 1, consists of a "natural crook" from a branch of some hard-wooded tree, in the form an inverted V, one arm of the crook being fastened into the saw clasp, while the other, which is in an inclined position, furnishes the handle for the operator. Figure 2 shows the method of procuring the handle from the fork of a small tree, or from the junction of one branch with another on a large tree. The use of this handle, our correspondent claims "saves the muscles of the shoulder, as a person using the handle can stand upright and saw, while with the straight handle the elbow must be kept level with the work." Any device that will make easier the work of sawing logs with a cross-cut saw will be welcomed by the many who have more or less of this shoulder-aching work to do.

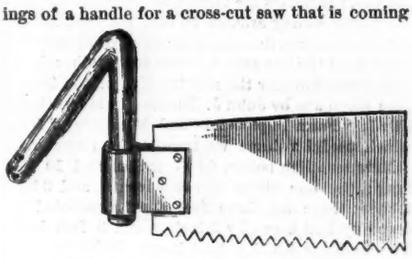


Fig. 1.—A CROOKED SAW-HANDLE.

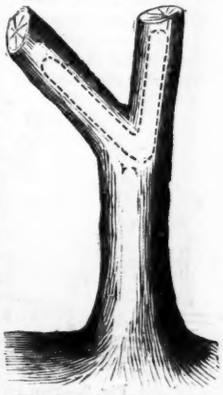


Fig. 2.—SELECTING THE NATURAL CROOK.

Revival in the Sheep Interest.—There are at present more calls for the names of raisers of pure-blood sheep, than for a long time. A short time ago, a gentleman wished to know where he could purchase several car loads of the best Merinos, mostly rams, for shipment to the Southwest. Not only is there a revival as regards the number of sheep to be raised, but a strong tendency to grow only those of the best breeds. The "boom" in sheep-raising, as the slang of the day has it, is a healthy one, and one to be encouraged, moreover it seems likely to last for an indefinite period of time.

Hay Sweeps.

We have requests for a plan of an implement to collect hay in a field and carry it to the stack or barn without loading it upon a wagon. This may often be done with profit if the ground is comparatively level and the stack or the barn is not far distant. The Hay Sweep, an implement that has been in use for some time, is one that well serves this purpose. The construction of the Hay Sweep may be learned from figure 1. It consists of a

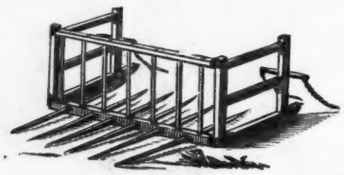


Fig. 1.—A HAY SWEEP.

large horse rake, of the "revolving" sort, and a stout frame attachment, as shown in the engraving. Two horses are required to work the Sweep, one attached to each end and guided by boys upon their backs. When in action, the horses pass on each side of the windrow, the Sweep as it passes along gathering up the hay, as seen in figure 2. In this way a load of 500 pounds can be quickly gathered up and taken to the place of deposit. In unloading, the horses are turned back and the sides of the frame swung around, so that the back side of the rake becomes the front; the Sweep is then drawn away from the hay and is ready for another load. The dimensions for the construction of the Sweep here given are by John J. Thomas, in his work entitled: "Farm Implements and Machinery," from which useful volume we borrow the engravings.

Main scantling below, 4 by 5 inches and 10 feet long; the one above it same length and 3 by 4 inches; these are three feet apart, connected by seven upright bars 1 by 2 inches, and 3 feet long. The teeth are flat, 1½ by 4 inches, 5 feet long, or projecting 2½ feet each way; they are made tapering to the ends so as to run easily under the windrow....Each gate (end) consists of two pieces of scantling 3 inches square and 3 feet long, united by two bars of wood 1 by 2 inches, and a third at the bottom 3 inches square and tapering upwards, like a short runner....The whiffletrees are fastened a little above the middle of the gate, and should be so arranged that they may be raised or lowered so as to be readily adjusted. Mr. Thomas estimates that the Sweep may be made for $6 or $7.

The rapidity and ease with which the hay in

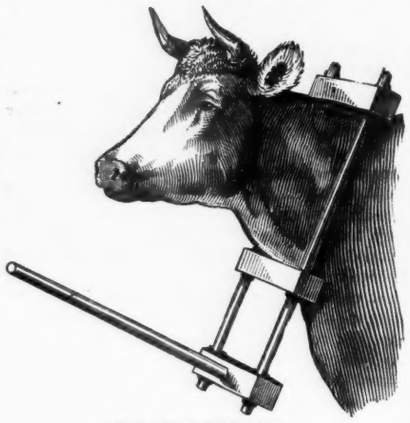
Fig. 2.—THE SWEEP IN USE.

many cases is gathered with this implement renders it one of great service to many farmers, and at just that hurried time when every aid is a help indeed.

Harrows and Harrowing.—Harrows, of which there are a great number of styles, from the old "A" "drag," with its great wooden teeth, to the steel, square hinged harrow, and those of a still later form, provided with wheels, and a seat for the driver, all have a common object to accomplish—the thorough pulverization of the soil, and mixing of the various fertilizers that may have been added, and thus make an acceptable bed for the seed. The easy access of air to the soil, which follows from a thorough use of the harrow, is a matter of great importance, as upon it depends largely the formation of available plant food, and therefore the growth of the plant, and success of the crop. The young growing roots—the ones that do most of the absorbing of food—can much more easily extend themselves through mellow soil, and reach the food that such a soil has in keeping for them.

A Safe and Handy Poke.

A poke is often required to restrain breachy animals, and a sketch of what seems to be a very useful one is sent by Mr. F. Coney, Van Buren Co., Mich. From his experience with this poke he claims that it does not cramp the animal's neck while eating or when lying down. Also, that it thoroughly prevents jumping, and is perfectly safe. It differs from the ordinary poke in having the "bow" much longer, so that the block carrying the projecting pole is brought down to about the bend of the knees. Mr. C. says that this poke is so thorough in its action that it is troublesome for the animal to get over the "bars," as they are ordinarily let down for cattle to pass. "This is no objection, as the animal most likely received its first lesson in jumping by being forced through half open bars." A poke to be efficient should prevent jumping at



THE POKE ADJUSTED.

the lowest and weakest point in a fence, and the one shown in the engraving appears to be such an one.

Links for Mending Chains.

It is often a great inconvenience to have a chain break, especially when many miles from home, or far from a blacksmith's shop, and the whole progress of the work comes to a standstill. A link like that in figure 1, is designed to come to the rescue in just such cases as this. Any blacksmith can make a number of them at a trifling cost, or one handy with the tools, can shape them himself. One or more of these can be carried in the pocket of the over-alls, or in some place about the wagon, plow etc., and thus the farmer, teamster, or lumberman, can go armed against breaks that are always apt to occur. The engravings show the construction, and the method of their application. The importance of an easily adjusted link to a broken chain, has led the Ingalls Manufacturing Company, to invent a link for the purpose, upon which they have secured a patent. This link is a split one, with the two parts so united by a rivet, that it can be opened and adjusted to the chain, without the aid of any tools. This link is shown open in figure 3, and closed in figure 4. These handy links are now quite generally in the trade, and can doubtless be had at most hardware stores. A small sum invested in a supply of these, or of the home-made links, may save a much larger sum.

Fig. 1.—A CHAIN LINK.

The Robin Question Again.

Professor S. A. Forbes, of the State Normal University of Illinois, in his elaborate report upon "The Food of Birds," published in the Transactions of the State Horticultural Society for 1879, gives a considerable space to the Robin. During the season 41 stomachs of this bird were examined and the insects found therein determined and placed in a tabulated form. During the month of March the food of the two specimens examined was very largely of grasshoppers and insects which feed up-

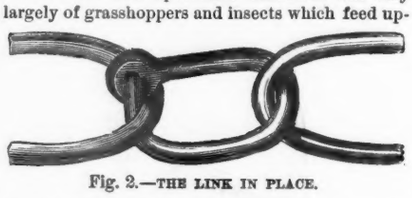


Fig. 2.—THE LINK IN PLACE.

on decaying vegetable matter. For this month nothing can be said against the Robin. In April eleven birds were killed, and the food was found to be much more varied than for the previous month. The record stands: caterpillars, 32 per cent; beneficial beetles, 23 per cent; scavenger beetles, 12½ per cent. "These birds have apparently done very much more harm than good during this month, eating predaceous beetles, which would probably have destroyed many more noxious insects than were found in their stomachs." For May much the same record is made, showing very little in the Robin's favor. During June 55 per cent of the food comes under the head of *fruits*, and of this the largest part is cherries. Though the food of the Robin was largely fruits, there were many injurious insects found, and the difficult question arises of how to strike the balance. A quart of cherries cannot offset the same measure of injurious insects. "When a bird eats fruit the injury done stops right there; there are no accumulating consequences, but when it destroys a noxious insect, it checks the increase of the species, it destroys not only the one actual insect, but an indefinably numerous host of potential ones." Prof. Forbes believes that this consideration settles the question, and that Robins are largely beneficial even in the month of June. In July there was, taking the insect food alone, 7½ per cent of beneficial insects, against 10½ per cent of injurious ones. "But a beneficial insect is far more beneficial than an injurious one is injurious." The amount of fruits eaten is large; a total of 77 per cent. "Even the most devoted friend of the Robin must admit that if these 14 were fair examples, the Robin is a nuisance in July." In August the bird makes a better record, and "a small margin of profit may be ascribed to his operations in this month."

Fig. 3.—INGALLS' LINK.

Fig. 4.

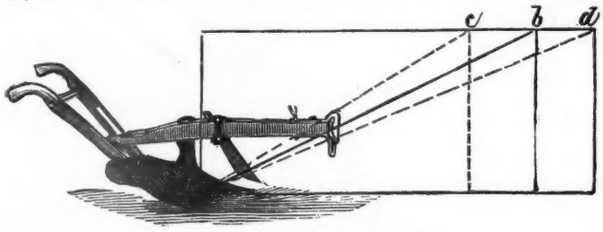
In conclusion Prof. Forbes writes: "These 41 Robins taken together had certainly done, just previous to the time of their demise, fully as much harm as good, as far as we can judge from the contents of their stomachs....Temporarily we may place the Robin in the list of moderately useful birds, using every opportunity to increase our knowledge, and for the time being leaving him practically to himself."

Stone-Boats.—At no time in the year, are stone-boats so much in request as at this season, when there are so many heavy things to carry to and from the barn and field. The harrows, plows, bags or barrels of grain, and fertilizers, with other things that are often taken across plowed ground, are best conveyed on a stone-boat. Every farmer should have one or more of these low and handy vehicles, which costs but a trifle for lumber and bolts, and can be made in the shop on a rainy day. All thin-

considered, the kind made from two-inch plank, sawed with an upturned end, is as good as any. When the boat is not in use, it should be placed on two timbers, or tipped on edge, so that the bottom may not rest on the earth, and thus be kept from the wet, and preserved from otherwise rapid decay.

The Line of Draught in Plowing.

One of the first essentials in good plowing is the adjustment of the clevis in the Line of Draught.



PLOW SHOWING LINE OF DRAUGHT.

No matter how perfect the implement may be in its construction and adaptation to the work required of it, if this adjustment is not properly made, it will not run on the sole and the furrow-slice will be irregular in form and imperfectly turned. Experienced plowmen, after repeated trials, will adjust the clevis to make the plow run level almost intuitively, without knowing anything of the principle involved in the changes in its position he finds it necessary to make. A knowledge of the various conditions that change the line of draught, and of the adjustments required in each case to make the plow run free, without a tendency to go too deep or too shallow, will, however, be of great assistance to those who wish to do the best work. The reasons for the adjustments required to make the plow run the proper depth will be readily seen from a close study of the accompanying engraving. The Center of Resistance in drawing the plow is a point (*a*) just above the sole. This point will, of course, vary slightly in position, being lower when the plow cuts a shallow furrow, and higher when the furrow is deeper. The line of draught is a line from the center of resistance, *a*, to the point, *b*, in the diagram, where the traces are attached to the collar. Now, to secure the free movement of the plow at a uniform depth, the clevis must be attached to the whiffletrees somewhere in this line, *a*–*b*. If the plow-beam is long, the end will be raised higher to cut this line—if the plow-beam is short, it must be lower for the same reason. If the traces are so lengthened that the team is farther from the plow, the weight of the collar remains the same, and the line of draught will then be represented by *a*–*d*, which cuts the clevis at a lower point, and a corresponding adjustment must be made to make the plow run as before. If the traces are shortened, the line of draught becomes *a*–*c*, the whiffletrees must be raised to the upper part of the clevis to keep the plow running at the same depth as in the other cases. When a smaller team is used, the point where the traces are fastened to the collar will be lower, and the effect upon the line of draught will be the same as that observed where the traces were made longer with the larger team. Every plowman knows that to hitch the whiffletrees to the upper notch of the clevis will make the plow run deeper, and to hitch in the lower notch will make the plow run shallow—and that to lengthen or shorten the traces will have the same effect. In each case, however, the adjustment consists in bringing the point of attachment in the clevis into the line of draught, which changes as the depth of the furrow varies, the attachment of the traces at the collar remaining the same.

Cotton-Seed Meal is a very concentrated food, and in using it this fact must be kept in mind. A ton of it contains about 37½ pounds of Potash, 50 lbs. Phosphoric Acid, and 75 lbs. of Nitrogen. It is highly nitrogenous, as the analyses show, and therefore should be used with substances rich in starch, or like materials, which contain little or no nitrogen. Two pounds of cotton-seed meal, is enough to feed daily to a cow or a horse; smaller animals, should have proportionally less. Fed in the quantities given, there is no danger of its doing any injury, but only good to the animal system.

Hints and Helps for Farmers.

A SELF FASTENING BOLT.—A simple and handy bolt is shown in figure 1, the important feature of which is the curved end. This end is so looped, that it will pass over the clasp *a*, when the loop is held upright. After the curved end of the bolt has been shoved past the clasp *a*, thus bolting the door, the bolt turns down of its own weight, to the position shown in figure 2, in which position it cannot be pushed back, because the lower part of the clasp *a* is longer than the upper. If it is desired to lock the door, this can be done by having a hole in the lower part of the clasp, through which the stem of a common padlock can pass above the curved end of the closed bolt.

A MENDING CLAMP.—One of the handy things on a farm, is a clasp to hold firmly together the broken

Fig. 1.—BOLT OPEN.

pieces of harness, halter, etc., while being mended, like that shown in figure 3. The clamp consists of two curved hickory strips, which are nailed to a

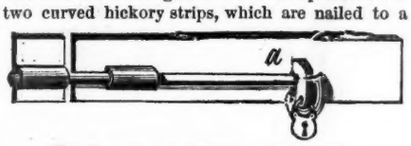


Fig. 2.—BOLT FASTENED AND LOCKED.

small square block by one end, the opposite ends pressing upon each other with some force. The ends where they come in contact, should be so shaped that they will meet squarely, with as large a flat surface, as the thickness of the material will allow. When in use, the clamp is held between the knees, so that any additional pressure may be easily given. The implement is often made from portions of two barrel staves, which is much easier than to work out the hickory pieces, and for most purposes for which the farmer needs a clamp, made in this way will answer about as well.

Fig. 3.—MENDING CLAMP.

A LITTER BASKET.—There are many occasions upon the farm where an ordinary basket is far too small for the best service. The one shown in the engraving below (fig. 4), is designed to meet such cases, but the writer has specially in mind the use of it in carrying green fodder from the field to the

Fig. 4.—A HANDY LITTER BASKET.

stable, where it is to be fed, provided the distance is not very great. The Basket consists of a large open, hoop-pole box resembling a crockery crate—but not so heavy, with two bars, fastened upon the sides to serve as handles by which it may be carried by two persons. Such a basket can be used for gathering various kinds of roots, cabbages, etc., and, in fact, very many things upon the farm.

A COW CURRY COMB.—"R. E.," Snyder Co., Pa., sends a sketch of a curry comb and brush for use in the cow stables. It is made of broom-corn, for the brush part, and two pieces of wood 6 or 7 inches long for the "head" fastened together by two bolts, with the broom corn between them, as is shown in figure 5. A handle of any desired length is fastened to the middle of the brush. Mr. E. likes it better than any other curry comb that he ever used with his cattle.

5.—A COW CURRY COMB.

ANOTHER WAGON JACK.—No doubt that so long as wagons run, they will need to be oiled or greased, and to do this, jacks will be used. A subscriber adds still another to our collection, in sending a sketch of one he has used for a long time, and which he thinks superior to many he has seen. The engraving, figure 6, gives the method of construction of this jack, and it needs but little explanation. The base is large, which is an important point in an implement of this kind. A single upright piece, a lever with a few notches, and an iron key, with a couple of bolts to secure them to the standard, are the materials required to make the jack. The method of operation is simple, the dotted lines showing the different positions of the lever.

Sheep Washing.

It is a question in the minds of many wool-growers as to the practical utility of washing the fleece while it is still upon the sheep's back. A deduction—usually one-third—is made by the wool-buyers from the weight of all unwashed wool, and in most cases this is not far from the loss which the fleece would sustain in the process of washing, if it is done with the average amount of thoroughness. Nevertheless, the practice of washing the sheep is

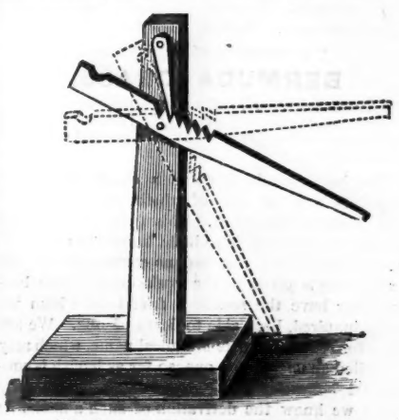


Fig. 6.—A JACK FOR LIGHT WAGONS.

very general, and if there is no return in money for the labor of washing, there is the satisfaction of having cleaner wool to work with when shearing.

The common method of washing is to select some favorable place in a brook where the water is about 3 feet deep, the bottom hard and gravelly, and the current moderate, and then build a pen of rails sufficient to hold a large flock, and provided with a narrow opening towards the stream. Into this pen the sheep are driven through an opening, temporarily made for the purpose, at the rear. One man, perhaps aided by a boy, tends the flock and passes the sheep to the washers who are standing in the stream. The sheep should have been previously tagged and freed from all large soiled clots. The washing should not be done until the water has become so warm that the sheep may not be chilled and injured. Special care must be taken with old or sickly sheep, and ewes that are still with lamb. An exposure of the sheep to a warm rain

the day previous to the washing is an advantage, as it softens and loosens the dirt and renders the washing easier and more thorough. As the sheep are washed they should pass out upon a clean, grassy slope that rises gradually from the stream, otherwise the water-laden animals may fall and soil their fleeces. After washing, if the weather should suddenly turn cooler, the flock should be provided with shelter, to prevent their taking cold, as they would be very likely to do. From the time of washing to that of shearing, two weeks or so, the sheep should be kept in a pasture that is free from any bare ground, overhanging banks, or steep side-hills, so that the wool may be kept clean.

A second method of washing, which is employed when the stream is small but somewhat rapid, is to arrange a spout for the passage of the water, and hold the sheep under the end—the water flowing upon the animal. In this way the washer does not go into the stream, and if provided with rubber boots and apron, may keep himself comparatively dry. The washing by this method is very thorough as there is a stream of clean water constantly flowing into and through the wool, and carrying off the impurities as they are removed from the sheep.

Bogus Bermuda Grass.

Serious "Official" Blundering.

A friend in Marshall, Texas, wrote a while ago, that the same mail which brought him the February *American Agriculturist*, containing an article which stated that Bermuda Grass was not known to produce seed in this country, also brought him a package of "Bermuda Grass *Seed*," from the Department of Agriculture at Washington! Naturally he was in a quandary, and inclosing a sample, said; "Please tell me if this is *the* seed, if so, is it probably brought from some other country?" We opened the parcel;—with all our faith in the capacity of that Department for blundering, we could hardly believe it. It did not seem possible that any one not entirely daft, could have sent *this* for Bermuda Grass. We wrote to our Texan friend for the label sent with the seed, and in response to this request he sent not only the label, but the parcel as it was received. There could be no mistake about it—at least not on his part. The label reads thus:

"Department of Agriculture.

BERMUDA GRASS.

☞Note and report, soil, culture, time of ripening, quality, and quantity of crop. This is required of all persons receiving seeds, as a condition of the distribution."

The bag contained about a quart of broken spikelets, a whole one of which, of the natural size, is shown in figure 1. This grass, though well known to botanists, is so little known to people in general, as to have recieved no common name—at least, none is given in the works on southern botany, nor have the southern friends of whom we have inquired, been able to learn of one. We are therefore confined to its botanical name, which may be called an uncommon one, so far as length is considered—*Stenotaphrum Americanum*. Generally when we know the derivation of such a name, its meaning helps us to remember it, but in this case it does little good to know that *Stenos* means "narrow," and *Taphros* means a "groove," when the "narrow groove" is upon a part of the flower quite hidden from sight, and so small that only a glass will show it. As to the specific name, *Americanum*, that can hardly be regarded as descriptive. We do not take sufficient space to figure the whole plant, as the flowering portion is the characteristic part of it. It has extensively creeping stems, from which arise flowering stems about a foot high, bearing one to four such spikes as that in figure 1. The structure of the spike is quite unlike what we are accustomed to see in grasses; that portion which holds the flowers (and seeds), is thick and flattened, and the flowers are hidden in little depressions, or excavations in its substance—a structure so unusual, that it would arrest the attention of any observing person. Compare this figure with that of the spikes of Bermuda Grass in figure 2, both being of real size. Can any two grasses be more unlike? Yet the Department of Agriculture of the United States, sends this over the country as Bermuda Grass! When Newton was at the head of the Department, a friend of ours was in the office on some business, and saw a box, labeled "*Echium vulgare*," and on asking what that meant, he was informed that it was "the seeds of a new honey plant just imported from Europe," which was about to be distributed for trial as bee pasturage. Our friend, thinking that there was already quite too much "Viper's Bugloss," or "Blue Devils" in the country, made such a vigorous protest, and brought such strong evidence upon the point, that the country was saved this scattering broadcast one of the worst weeds known to our agriculture. It appears that the Government Seed Shop has not improved in all these years. Let us say here, that the sending out of this stuff for "Bermuda Grass," could not have happened had the Botanist of the Department been consulted—and the very fact that it is done, shows that he was not consulted—for he, being a man of science, would have protested against it. But what is the *Stenotaphrum* really? Not being Bermuda Grass, what is it good for? will be asked. This is a point upon which we have not been able to get any direct information. Doct. Porcher, in his excellent work on "The Resources of Southern Fields and Forests," does not mention this species of grass, which is in itself strong negative evidence, for scarcely any vegetable product of even doubtful utility, has escaped this industrious author. Chapman says nothing as to its uses, and Elliott, (1821), whose descriptions are much more in detail, and who rarely fails to notice the popular reputation a plant may have, if useful or otherwise, says nothing of this, nor do recent inquiries add to our knowledge. The plant is described as growing near salt water, from South Carolina to Florida. If a grass found within the influence of salt water, should be found of any value in cultivation, it would be something remarkable. But that is not the question, and does not affect the fact that the Government Seed Shop is conducted with a lack of accuracy, a wicked, blundering stupidity, that would ruin any one legitimately engaged in the seed business. A salt-water grass, not its seeds proper, but its seed clusters, of no known utility, is sent over the country at public expense by the Government mails, with the Government label, under a false name, pretending to be the seeds of a grass, which, under certain conditions, and with proper management, has real value, but which has never yet, so far as our most experienced botanists have learned, produced seeds at all in this country. This Government distribution of seeds is a sham and a farce. Sustained under the plea that it introduces new and rare varieties, it really supplies squash, tomato, and other common garden seeds, that the many have to buy, to the friends of a few Congressmen. When it undertakes to give out a novelty, it is quite apt to send seed of a tropical plant, with no explanation, to Northern Minnesota, or make some other blunder. But this Bogus Bermuda Grass Seed, is the most glaring example of the utter ignorance, of the entire lack of appreciation of the importance of accuracy, that has come to our knowledge. It is time, if this seed business is to be continued, that it cease to be carried on to the detriment of the farmers of the country. How many, who having read of the value in some localities of Bermuda Grass, will plow, harrow, sow, and watch and wait, and if they get any return, will have only what is likely to be a useless salt-marsh grass—at any rate not Bermuda Grass. Thus an error goes out with Government sanction, which will not be rectified in years. Instead of striving for a seat in the Cabinet, or giving banquets marked by the conspicuous absence of nearly all of the bidden guests, the head seedsman had better get some one in his shop who knows Bermuda Grass, that its botanical name is not *Stenotaphrum Americanum*.

Fig. 1.—"BERMUDA GRASS" (*Stenotaphrum Americanum*) OF THE U. S. DEPARTMENT OF AGRICULTURE.

Fig. 2.—THE BERMUDA GRASS (*Cynodon Dactylon*).

Some of the Newer Grapes.

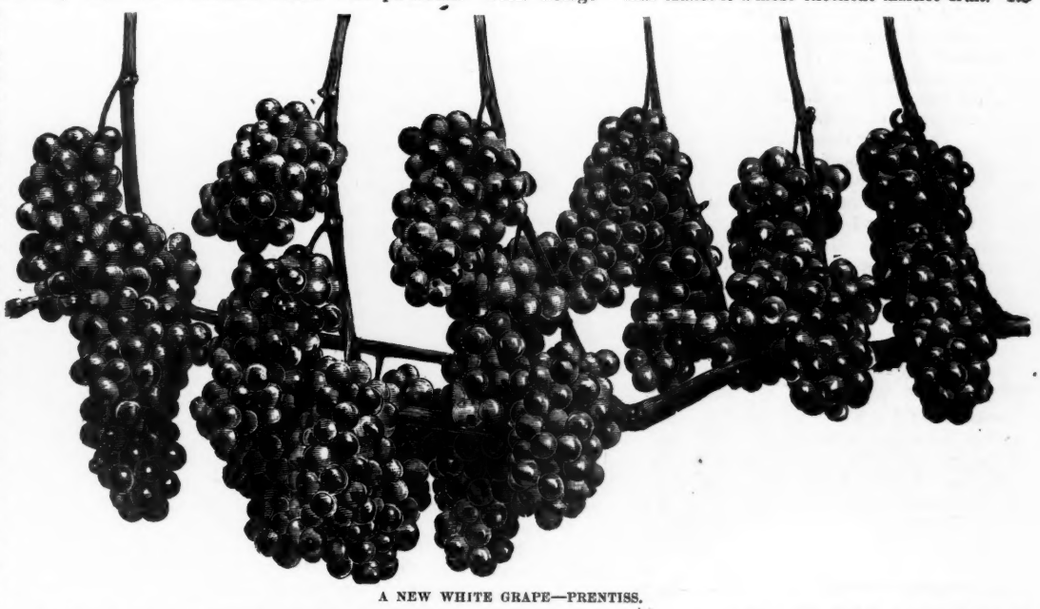
It is interesting to look back 12 or 15 years in our volumes, and see how largely they were occupied by articles on grapes and grape-culture. There seemed at one time danger of a second "multicaulis mania," so generally did grape-culture occupy public attention. The sudden cessation of this interest is one of the most curious incidents in the history of our fruit culture. The inroads of the Phylloxera, though unrecognized, had much to do with the collapse, but not all. Our people in this, as in many other things, had a "zeal beyond knowledge," and that cooling off, which in such cases is sure to come, took place in this instance with a most surprising suddenness. Though grape-culture has, since that time, been remarkably quiet, it must not, on that account, be inferred that nothing has been done. In fact, there has probably been more real progress in these last 12 years than in all previous time. Formerly it was thought that progress consisted in producing new varieties of grapes, and the great point was to get *the* grape. We already had the "grape for the million," but our leading grape-men strove to find one grape for "all the millions." As we look back upon it how droll it all seems. There were several who claimed to have *the* grape, and how perfect (in its producers eyes at least), that grape was! To ask a question implying that the grape had a fault, was as great an offence as to speak disparagingly of the owner's wife. The grape-safety of the nation was to hang upon *the* grape, and it is astonishing how many of them there were. Where are they all now? We have learned much since those exciting times. When we learned that there was not, and in the nature of things could not be, *one* grape for the whole nation, a long step was made forward. When that point was admitted, the occupation of those who had *the* grape was gone. The Phylloxera was a dreadful scourge, but it taught a most important lesson, that there were grapes—and grapes. Grape-growers out not

recognized the fact that while Nature had given us several very distinct species of wild grape, they had been working, with remarkably few exceptions, upon the varieties of one species and hybrids from them. The Isabella and Catawba, the Iona and Walter, the Concord and Ives, and a long list of others that have had their season of popularity, were all derived from one and the same wild species, and consequently partook, more or less, of the peculiarities of that, whether those were desirable or otherwise. The general recognition of the fact, and working upon the knowledge that there were, at least, three other species of native grapes, the varieties of which might be valuable, was the next forward step in grape-culture. The varieties we have referred to are derived from the common Fox Grape of the Atlantic slope—the *Vitis Labrusca* of botanists. Besides this there are *Vitis æstivalis*, the Summer Grape, *Vitis cordifolia* (sometimes called *riparia*, for reasons we need not give here,) the Frost Grape, and *V. vulpina*, the Southern Fox, or Bullace. This last is restricted to the far Southern States and need not be considered, but the other two species have proved mines of horticultural wealth, which have amply repaid the thorough working they have received in the past few years. We would not be understood to say that varieties of these species were not previously known in cultivation, as every one familiar with grapes knows better; but, that it is only recently that an earnest effort has been made to seek out new varieties of these, and to improve them by the production of new seedlings. We have turned out of the old ruts and are running in new tracks. Not only do the species mentioned differ in their fruit, but they are unlike all through, even to the texture of the wood and the ease with which they may be propagated from cuttings. As stated in another article, the grape-louse—Phylloxera—is not destructive to all grapes alike, there being certain varieties that are so little affected by the scourge that they are practically Phylloxera-proof. Upon this fact, it is not too much to say, rests the future of grape-culture in this country, and the search for varieties which, while they resist the Phylloxera, shall be equal to the older kinds in the quality of their fruit, has led to the great recent improvements in grape-culture to which we have referred. We had varieties before of which the fruit was good enough, well nigh perfect, but we couldn't get it, no matter how many vines we had; there was "mildew of the leaf," there was "rot of the berry," and there was "the vine didn't do well with me"—another name for Phylloxera, that stood between us and the fruit we knew to be so excellent. It is largely due to the devoted grape-growers of Missouri, and to Mr. Ricketts, of Newburgh, N. Y., who has been at work in the same direction, that we now have several, with the promise in the near future of several more, varieties of grapes, the fruit of which is of excellent quality—and, what is more to the purpose, the vines are thus far, without the drawbacks that have made grape-growing too often little else than a series of disappointments. While we anticipate gratifying results from the introduction of new varieties derived from the *æstivalis* and *cordifolia* species, the former being especially suited to the Southern States, we would not forget that great improvement has been made in those derived from *Labrusca*. Because other classes of grapes are coming to the front, it will be a long time before these will go to the rear, especially as table grapes. In this class we find some of our very best and our very worst as to quality, and there is no uniformity as regards their ability to resist mildew, Phylloxera, etc. Among the newer varieties especially noticeable are Brighton, Highland, Jefferson, Moore's Early, and Storm King among dark grapes, while in whites we have Duchess, Pocklington, Niagara, Lady Washington, and Prentiss. Among new grapes should be included the wonderful collection raised by Mr. Ricketts, a few of which have been offered, but many choice treasures are yet in reserve. Indeed, so many have been the additions to the list of grapes that a new work on grape-culture was needed, if only to record and describe these, as they have all appeared since any of the standard books were published. Prof. George Husmann, of the State University of Missouri, has given us such a work,* and all who know anything of grapes and grape-culture will concede his ability to do so. This work, while it gives the author's methods of growing and training the vine, which are generally followed in Missouri, and shows how to convert the fruit into wine, is especially valuable for the information it gives on the newer grapes of all classes. We give two engravings from the book, showing two of the newer varieties, one of a peculiarly western type, the Elvira, and the other, the Prentiss, one of the recent eastern additions to the grape list.

THE ELVIRA GRAPE.

THE ELVIRA belongs to the class of grapes derived from the species *cordifolia*, and is very interesting, as showing that a faulty, almost worthless variety, may produce a seedling of great excellence. It was raised by Jacob Rommell, of Mo., and is a seedling of the Taylor. The parent is chiefly noticeable for a wonderful extent of vine, and a corresponding scarcity of fruit. The fruit is well enough, but the berries are but few in a cluster and small. The Elvira—well, to hear our Missouri friends talk, brings back the days when the originators of the Iona, the Walter, set forth their merits, with this difference however: those grapes had no faults, while the Missouri people admit that the Elvira has just one; The bunch is so compact, that sometimes a rain coming after a drouth, causes the berries to crack. It is a white grape of medium size and great beauty, and of excellent quality for both table and wine; perfect hardiness, entire freedom from disease, great productiveness, and ease of propagation, are claimed for it. The shape of the bunch is given by the engraving, with which is a separate berry, to show the actual size.

THE PRENTISS was raised by a gentleman of that name, in Western New York, and is from the Isabella. If bad qualities were always transmitted, this should have its share, but, on the contrary, the vine appears to be exceedingly healthy. This is also a white grape, of medium size in bunch and berry, of good quality, and a toughness of skin, that makes it a most excellent market fruit. Its productiveness is shown in the engraving, and is something wonderful. As we saw and handled the vine from which the photograph was taken, we know that no bunches were tied on for effect; indeed, when we say that it was exhibited by Mr. T. S. Hubbard, of Fredonia, N. Y., the assurance is unnecessary. It was wonderful as a specimen of fruitfulness; but no vine should bear so much.



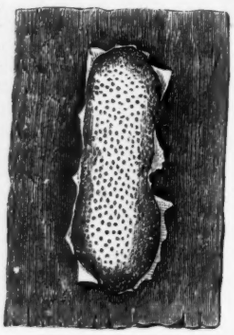
A NEW WHITE GRAPE—PRENTISS.

*American Grape-Growing and Wine-Making, by Prof. George Husmann. New York: The Orange Judd Company, 245 Broadway. Price, sent by mail, prepaid, $1.50.

The White Moulds on Plants.

A number of our cultivated and other plants are often attacked by members of a small group of Fungi, which, from the prevailing color of the blotches and spots they produce, are commonly spoken of as the *White* Moulds. The mustards are especially subject to these moulds, their stems (a portion of one is shown in fig. 1) frequently being almost entirely covered with the white spots, which have been likened to streaks of white-wash, and not without good reason. The Cabbage, Cauliflower, Shepherds' Purse, and a number of other plants belonging to the Mustard Family, are subject to these pests. One species of the White Moulds is common on the Salsify, or "Oyster Plant," and in some localities "it is so abundant as to excite fears that the crop might be destroyed." Figure 2 shows an enlarged view of one of the spots of figure 1. It is seen that the epidermis, or skin of the mustard stem, is ruptured and forced back by a mass of white-colored substance, which arises from the interior. This substance consists of a vast multitude of spores which are white and closely packed together. A cross-section of one of these small spots from a leaf, is shown in figure 3, from which a clear idea of the nature of the mould may be gained. The skin of the leaf is shown as ruptured and turned back—the substance of the leaf below is seen to consist of oval cells which are shaded or *dotted;* those at the lower portion being regular in their arrangement by the side of each other. The fungus itself consists of minute threads, which may be seen passing between the leaf-cells and ending at the point of rupture, in rows of nearly spherical bodies, which extend upwards, and are exposed to the open air. Two of the rows of spores are shown still more highly magnified at the right of figure 3, with the attachment to the thread at the base; some new rows of spores are beginning to be formed. The slender threads which pass through the substance of the mustard, or cabbage plant, act as roots for the purpose of taking up nourishment, and it is only after these threads, or filaments, become numerous and well established, that the fungus turns its attention to the production of spores. In this respect fungi are like all other plants, first they accumulate a stock of nourishment and then devote it, or a large portion, to the propagation of the kind. The white spores, which are formed in such large quantities, are for the rapid increase of the mould; and they are carried by wind, rain, etc., to some new place on the same or another plant, where they germinate and grow, and produce a new spot in the course of a few days, thus spreading the disease with great rapidity. Besides the spores just described, which we have seen are produced in rows upon protruding filaments, and are for immediate growth, there is another kind which is formed by a slow process by the union of filaments down in the substance of the plant upon which the fungus is growing. This second kind of spore is much larger, provided with a thick, firm coat of a dark color, which is variously marked upon the surface. A considerable portion of the growing season is required for the perfection of spores of this kind, and they can be found in autumn always within the substance of the plants. They do not germinate at once, but remain dormant through the winter, and grow the following spring. The germination of these *winter* spores, as they may be called, is peculiar. The contents divide up into a large number, sometimes as many as a hundred, small bodies, each of which then grows and produces a separate plant. Figure 5 shows one of these winter spores, also one producing a multitude of small bodies, each of which is provided with two minute hair-like threads, and capable of motion. One of these little bodies—motile spore—is shown greatly magnified near the center of the engraving.

Fig. 1.



2.—WHITE SPOT MAGNIFIED.

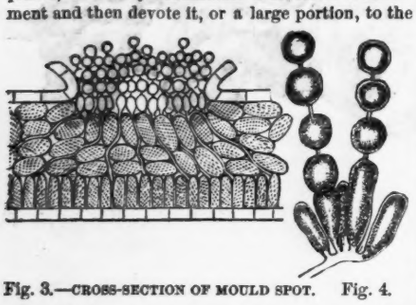


Fig. 3.—CROSS-SECTION OF MOULD SPOT. Fig. 4.

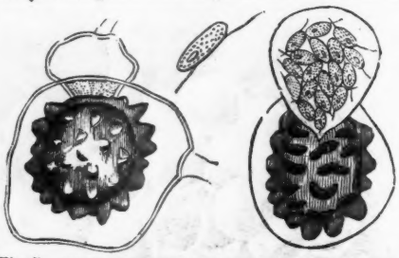


Fig. 5.—WINTER SPORES AND THEIR MOTILE SPORES.

Up to the present time the injurious effects which have resulted from the White Moulds have been small as compared with those from many other fungi. From the general similarity of the members of the group in hand to the Grape Mildew, the treatment should be the same, namely: the use of Flowers of Sulphur, dusting it freely upon the plants so soon as there are any signs of disease.

A word can be said in favor of the White Moulds, in that one species is very fond of the common Purslain or "Pussley," and often attacks it so vigorously as to endanger its life. For this no one will complain. Another member is a lover of the "pig weeds," and helps to keep them in check. If we could induce all fungi to grow only upon our weeds it would be a strong point gained.

The Great Enemy to Grape Culture—Phylloxera.

Since the first discoveries concerning *Phylloxera*, we have through one cause and another said but little about it. Indeed, since we had an article on the subject a vast number have taken up grape-growing, multitudes of new readers have come to our pages, and it seems necessary to give a brief account of it. *Phylloxera* is a plant-louse, the name, which stands for a genus of these insects, is derived from Greek words, meaning *a leaf*, and *parched*, from the scorched appearance that oak-leaves assumed from the attacks of another and an earlier known species. The full name of the one in question, that which preys upon the grape, is *Phylloxera vastatrix*. It is an American insect, and was a cause of serious losses to our grape-growers long before its existence was known or even suspected, and passing to Europe completely devastated the vineyards of some localities, and where wine-making is an important industry, caused losses only to be estimated by millions of dollars. Those familiar with grape-vines must have noticed—especially upon the Clinton—leaves studded with small warty looking galls, as in fig. 1, which sometimes present a very pretty appearance. Some seasons these are very abundant, and again rare: these, if cut open and examined with a magnifier, will be found to contain an orange-colored insect and her eggs. Figure 2 represents one of these galls thus divided, the cross line giving the real size. This is one form or type of the insect, which lives only upon the leaves, and does comparatively little damage. Another type of the insect inhabits only the root of the grape-vine, and as this is the most important from the injury it is capable of inflicting, we will not notice the other any further at present, beyond saying that it is called the Grape-Gall-Louse or *gallicola*-form of *Phylloxera*. A vine is observed to make a poor growth, the next year the growth is still less vigorous, the leaves turn yellow, and that year or next the vine dies outright. If the vine be dug up, it will be found to have no fibrous roots, and after its death it is very likely that no cause of the trouble can be found. If, when the symptoms of failing first appear, the vine be dug up and its roots examined, they will be found to present the appearance shown in figure 3, and a magnifier will allow the cause of the trouble to be plainly seen. In figure 3, a small fibrous root, one of the rootlets, by which the plant feeds, is shown at *a*. Upon the portions of the larger roots, marked *d, d, d*, great multitudes of minute root-lice will be found, and elsewhere on the root-fibres; these when young and tender are punctured by the insects which suck away at their juices, the results of their injuries being seen in the swellings and knots formed upon the root-fibres, as shown at *b*. After they have exhausted one, they go to others, and this rootlet soon begins to decay, as shown at *c*, and before long the whole root-system of the vine is completely destroyed, and the vine of course dies. This being the form of the injury, let us briefly describe the insect which causes it. Like many related insects, the *Phylloxera* has its winged and its wingless forms, and its females are capable of reproduction for several generations without the presence of males. The insect passes the winter in the dormant state upon the roots of the vine, as larva, which is much like the root in color; when the growth of the vine starts in spring, these rapidly reach the mature wingless state, and commence laying eggs. In figure 4 is given *a*, the back, and *b*, the side view of these wingless females, magnified, the real size being shown at the left hand of *b*. These eggs hatch and produce other egg-laying females, and five or six generations of them follow on, the insect thus multiplying rapidly and preying upon the growing root-fibres. About midsummer, some females with wings are produced, and these make their way to the surface, and fly away to found new colonies, and this continues, the production of winged females, until the growth of the vine ceases in the fall. A view of a winged female is shown at figure 5, of course greatly magnified. These winged females carry the trouble from vineyard to vineyard, and it is believed the wingless ones make their way over the surface and through crevices from vine to vine. There is much that is interesting in the history of the insect, such as the production of both sexes after several generations, which start the race anew for several continuous generations of egg-laying females, and that the root-lice may produce the gall-lice upon the leaves, but we can not occupy space with these. The point with the grape-grower is, to know the disease; what causes it, and the remedy. Here, of remedy proper, there is none. Various applications have been suggested, but they are impracticable. The root-louse attacks all forms of the European vine (*Vitis vinifera*), and is sadly destructive to it, the climate in many European wine countries being especially favorable to the development of the insect. The

Fig. 1.—THE LEAF GALLS.

Fig. 2.

capital discovery has been made that all varieties of American grapes are not equally injured by Phylloxera, and that while it is almost impossible to cultivate some, on this account, there are others that may be regarded as *Phylloxera-proof*. This dis-

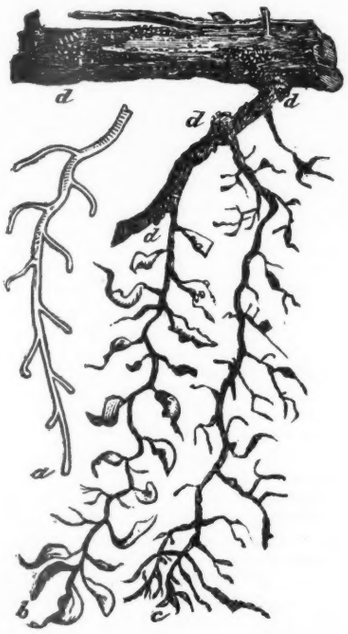


Fig. 3.—ROOTS OF THE GRAPE.

covery and its practical application, in the production of varieties that produce good fruit above ground, and can in their roots resist the destructive little louse, have given new life to grape-culture in this country. Already several varieties are now known that do both, and still others are soon

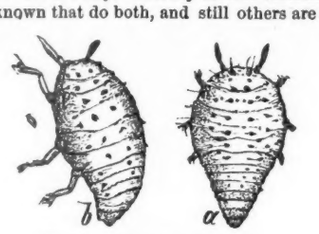


Fig. 4.—WINGLESS FEMALES.

to be expected. Not only has the influence of this discovery revived the hopes of our vineyardists, but it is likely to prove the salvation of grape-culture in Europe. Thousands, if not millions, of our Phylloxera-proof vines and cuttings have gone abroad to be used as stocks in their vineyards, upon which, by grafting, to establish their grapes on invulnerable roots; and as *Phylloxera* has already appeared in California, where the European grape is so largely cultivated, the vineyardists there must soon adopt the same measure of safety. Thus America, which sent the insect which at one time threatened to make barren the vineyards of Europe, has afforded the only practical relief. The engravings here given are from the Missouri Reports of Prof. C. V. Riley, whose labors in relation to this injurious insect alone would accord to him the highest rank as a scientific and practical entomologist.

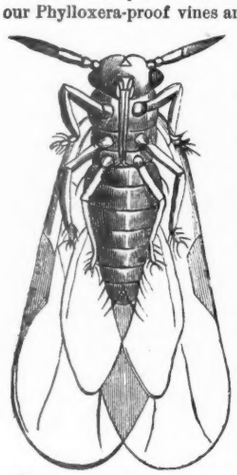
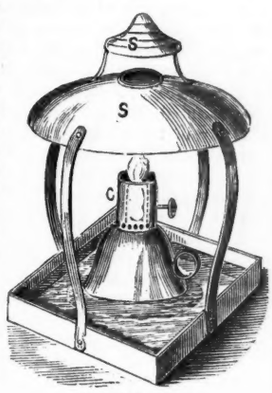


Fig. 5.—WINGED FEMALE.

Another Orchard Lamp.

In March last we gave in an account of the North Texas Pomological Society a description of a lamp adopted by the Society, to be used in trapping night-flying insects. After that paper had gone to press, we received from the Secretary, T. V. Munson, Esq., a letter, stating that he had been experimenting with the different lamps that had been presented to the Society, with a view of learning which was the most economical of oil, and would best hold its flame in the wind. He sends a drawing of one which he finds preferable to the lamp figured in March, and which he had selected as probably the best without having tested it. The apparatus here given has a common brass hand-lamp, with a slotted burner; it has no chimney, but is provided with a cylinder of brass (*c*) open at both ends, placed over the burner to shield it from side gusts; the cylinder is perforated around the lower margin, to allow of better ventilation and prevent heating. The lamp stands in a pan of water upon which a little oil floats. A stationary double shade (*s*) is attached to the pan. Mr. M. estimates the cost of the whole at $5 per dozen." This wholesale destruction of insects is a matter that needs careful observation and study, and in presenting one of the methods by which it is proposed to accomplish this, we by no means give it full approval. In catching insects the light attracts and the water drowns all night-fliers alike; many thus caught will no doubt be injurious, others will be, so far as known, without any direct relation to our fruit and other crops, while others still may be positively beneficial as destroyers of other and harmful insects. It becomes a problem whether the capture of beneficial insects is not a greater injury than the taking of the noxious ones is productive of good. Experiments are needed before this matter can be decided, and it is likely that the results will be very unlike in different localities and in different seasons. We hope that the wide-awake Texan pomologists will aid in settling this question.



AN INSECT LAMP.

An Asparagus Bed.

If any farmer were to read the directions given in the older works for making an Asparagus bed, he would at once conclude that Asparagus was a luxury not for him. A pit was to be dug, and oyster shells or brick-bats put in for a foundation; then numerous loads of manure were to be buried by trenching, and so much circumstance attended it that ordinary persons were frightened at the labor and expense. But of late years our garden-books do not copy English methods, and in nothing is the change for the better seen more distinctly than in Asparagus culture. Any one who can set out tomatoes can plant an Asparagus bed. The first thing is, to get the plants; good strong plants a year old may be had of most seedsmen. If one prefers, he can raise the plants; the seed is to be sown in a rich bed just as beet seed is sown; make rows 15 inches apart and an inch deep, distribute the seed evenly, and cover; when the plants are well up, thin to three inches, and keep clear of weeds all the season; the plants may be set next fall or the following spring. Those who buy the plants will gain a year; they are usually advertised in our columns. For family use the distance of planting varies. Where there is a plenty of room, rows three feet apart, with the plants a foot distant in the row, is better than nearer. Choose good garden soil, and set the plants so that the crowns will be at least four inches below the general surface. At planting, give each root a spadeful of fine manure or compost, and trust to annual manurings to keep the plants in a productive condition, instead of the old method of manuring once for all future time. During the season keep the bed well cared for, the soil loose and free from weeds. As a general thing, the plants should grow two years before cutting. There are several new varieties now offered. Smalley's Defiance, Giant, and the Colossal are the most prominent ones.

A Ticket or Label Holder.

Those who exhibit fruit, wish visitors to know whose it is, and those who visit exhibitions wish to know whose and what the fruit is. Yet every one who has had much to do with exhibitions, is aware that after a dish is handsomely filled with specimens, there seems to be no place for the ticket. If put upon the fruit it hides a portion of it, and disfigures what would otherwise be a handsome object. If the card is laid upon the table it is very apt to be displaced either accidentally, or by those persons who use their fingers to aid their eyes. The necessity for some contrivance to attach the ticket to the plate and to the dish led to the invention of one several years ago by our friend, E. W. Buswell, Treasurer of the Massachusetts Horticultural Society. Now another contrivance for the same purpose comes to us from Mr. Peter Rudell, Grand Rapids, Mich., who, without any knowledge of the other, has contrived the device shown in the engravings. The affair is made of brass wire, which has considerable elasticity, and is bent in the shape shown in figure 1, by which it will be seen that the wire is all in one piece, and so bent as to afford at one end a clamp to clasp the edge of the dish, while the other holds the card or label, which is placed between the ring and the straight piece of wire shown as crossing the ring. If desired to hold the card still more securely, that end may be made sharp and bent at right angles to form a small point to penetrate the card. A card once put in place in this holder is secure against removal by any passing wind, and is held up where it is seen to the best advantage, by all who wish to be informed of that which the label is to represent. With a bit of wire of a size a trifle larger than the one shown in figure 1, one can, by following the engraving, soon learn the bends necessary to give it the proper form. Figure 2 shows the way in which the affair is used; it holds the label well away from the fruit, allowing both that and the fruit to be seen. Mr. R., by freely giving them this little invention, has placed exhibitors of fruit and managers of exhibitions under obligations to him. Now that the spring shows are at hand, those in charge of them should provide a supply of these useful and convenient affairs, as Strawberries are, of all fruits, the most easily disfigured by having large pasteboard labels laid upon them in the ordinary way.

Fig. 1.—SHOW-CARD HOLDER.

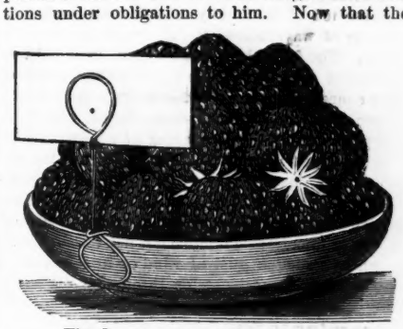


Fig. 2.—THE CARD-HOLDER IN USE.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

A Thermometer Frame.

Aside from the pleasure many persons seem to derive from the frequent consultation of a thermometer, apparently to ascertain whether they are hot or cold, it is of real use in giving an accurate knowledge of the heat of a room, and thus aid in keeping it of a proper and even temperature. Thermometers are now so cheap, and at the same time sufficiently accurate to serve as an index of temperature, as to be within the reach of all. We say "index," because it is a well-known fact that a person, of himself, is not able to judge of the heat or cold of a place with any great degree of accuracy. What is warm to one person may not be so to another—the sensation of heat and cold depending so much upon the temperament, personal health, previous exposure, etc. But we did not intend to discuss the uses of the thermometer so much as its surroundings. A plain thermometer—plain as to its scale and figures, and plain as to its mounting—is usually likely to be better than any fanciful one, and the best to buy. Many ladies with a taste for home decoration will contrive to

A NEAT THERMOMETER FRAME.

unite the useful with the beautiful, and provide some kind of a pleasing background against which to fasten the thermometer. The accompanying engraving suggests a form of frame which may be constructed of a variety of materials, and in a number of ways, allowing the taste to take a wide range. The frame here shown consists of a background of card board, upon which the scales of pine cones and acorns are tastefully arranged, and fastened securely by fine, stout thread. After all the parts are put in place, a coat of shellac varnish may be given which will greatly improve the appearance. The thermometer is secured in its position in the frame by means of fine wires which are made fast upon the back side of the frame. A thermometer thus framed is much less liable to be blown down by a sudden gust of wind or knocked from its fastening by accident, or through carelessness.

Learning to Sew.—To be handy with the needle, is one of the sterling accomplishments of every educated woman. To be able to take the "stich in time," is worth all the time and trouble that are required to learn the art. Like walking, reading, and the many other things which we come to do without special thought, the learning to sew is a slow process, and should be begun while the child is still quite young. The girl should not only have the use of the thread, needles, and patchwork, but be instructed how to take the stitches, turn the corners, and do the various things connected with needle-work. We are not excluding the boys in our remarks, because they need to learn to thread a needle, and do general sewing. Men are many times so situated, that they must depend upon themselves for their necessary sewing. Even if it is an age of sewing machines, it is best that all children should learn to use the simple, common old-fashioned kind, which can never be wholly superseded. The amusement and occupation that sewing furnishes little folks, afford sufficient reason why all mothers should see that their girls, and boys too, learn to sew—but the very practical use of the needle in after life, is the principal thing after all.

Home Topics.

BY FAITH ROCHESTER.

Some Things to Consider in Moving.

The 1st of May is general moving time in many towns and cities; and the residents in these, in seeking a new dwelling, find that there are many things which should be taken into account. If you have a family of little children, you must consider the moral influence of the neighborhood, and you will desire to shun the vicinity of liquor saloons or disorderly houses. You will hardly like to take your little ones into a neighborhood where the children are called a "hard set." Pure air is one great essential. Do not be satisfied with the general "lay of the land," but cast an eye on your near neighbor's back yard, after duly inspecting the one you propose to make your own. Is your well so situated that the water is likely to be pure? Is there a chance for keeping everything neat and clean about your own premises? Are there stables, pig-stys, or other probable nuisances on your neighbor's premises so situated that they are likely to poison the atmosphere daily breathed in your own house? A friend of mine secured a pleasant house, in a healthy situation, with a charming view of lake and city from the west windows. Not until he was settled in the new house did he observe that the low chimneys of a house close by obliged him to keep the pleasant west windows closed in order to avoid the smoke almost always blown from the west against his house. This annoyed him so that he gave up the house and sought another, for the view from his west window and the pleasant breeze from the lake were the chief attractions of the place. A lady of my acquaintance rented a small house for herself and children, and supposed it would be an easy matter to get settled in the new home. But she neglected to explore the cellar, which had no outside door, until she had cleaned and occupied the first and second stories. Then she found a task indeed, and an explanation of the sickening odor that hung about the place in spite of all previous cleaning. Several barrels of vegetables, mostly potatoes, had been frozen in the cellar during the previous hard winter, and had never been removed, though it was now mid-summer.

A house-keeper wants a house where the work may be done with least inconvenience. A business man wants a place convenient to his work. For the children there must be nearness to some good school. The mother wants a safe place for the little ones to play out of doors. The one who does the housework inquires anxiously if there is a good cistern or some plentiful supply of soft water.

Oiled Floors.

All who have tried them, so far as I have learned, cordially recommend oiled floors for kitchens, or other rooms where carpets are not used. These are preferred to painted floors, because the color does not wear away and leave bare places. Some use Burnt Umber with the oil, and so give a darker color to the wood. Others use oil alone. Boiled Linseed Oil is used, and it is applied hot, with a paint brush, a scrubbing brush, or even with a cloth. Rub it in well, and henceforth have no fear of grease spots on the floor. Farewell to all scrubbing hereafter. The oiled floor needs only washing (or mopping) with clear, warm water. Of course soap would only tend to undo the work you have done in oiling. The hot oil should be re-applied occasionally. It comes in well as a part of each years' house cleaning.

Rag Carpets.

My new one—new two years ago—is almost worn out now. And yet, though this one has not done very good service, I think more of rag carpets than I used to. It is not because they are especially fashionable, for I have seen only one rag carpet besides mine since I put it upon the floor. That other one, in the sitting-room of a near neighbor, has since given place to a cotton carpet of gay colors and pattern, costing half a dollar a yard. When I "run in" to see my neighbors, I usually sit with my feet upon an Ingrain or a Brussels carpet. It is very pleasant, and I admire the neat carpet and the flowering plants, and all the dainty trifles on shelves and brackets. But when I go home and find my "hit-or-miss" rag carpet strewn with the little girls' dolly work, and the little boys' whittlings, and the baby's crumbs and playthings, I am glad it is only a rag carpet, and that I am not obliged to worry about the injury which would daily happen to a nice carpet where five children spend a good part of their waking hours. Besides, I think it is more "*Eastlakey*" than the very gay carpets of some of my neighbors! Anyhow, it harmonizes better with my very plain sitting-room furniture than good Ingrain or Brussels carpeting would. I like nice things, and if ever Fortune gives them to me, I shall be thankful I hope, as I am now for babies and for the companionship of childhood, and for the experience of a mother. I believe I will make one more rag carpet, at least. I think it will be "hit-or-miss," instead of striped, and I think I will put it down as I did this, without sewing the breadths, but simply lapping them, one a few inches over the next, stretching each one well, and tacking them very little except at the ends. It is easy then to take up and shake or beat the carpet and put it down again, so that the worn places may be less exposed. It is easy to wash out the most soiled portions. I will have a stronger warp next time, and think I will have it in two colors, so that there will be stripes running lengthwise of the breadths. I will be particular in cutting and tearing the rags to have them so that they will be even-sized threads in the filling, for I have never liked to see the places in this old carpet where thick woollen rags have sometimes joined on to finer cotton strings, making the texture of the carpet uneven, and causing it to wear out more easily. The little girls must sew them neatly, so as not to give a bunchy look when woven. I think I will have the rags divided into three kinds for sewing—a basket of dark rags, one of light, and one of gay colors. The first may include the black and dark-browns and grays. The second will contain the light nondescript grays, browns, and old calico stuff; the third, anything at all bright. The one who sews can go round and round with these three lots, and so make a tolerably even "hit-or-miss." I am not *sure* that this will pay, but I am sure that I know of no carpeting for 50 cts. a yard that will do so good service as a good rag carpet made in the above mentioned way.

Trading With Rag-Buying Peddlers.

If the "rag man" paid as well for old rags as formerly, or if our old clothing sold for near the price which the second-hand dealers charge for it when they sell it, it would not pay most of us to make rag carpets. I was so disgusted with my last sale to a rag-buying tin-peddler, that I have been less saving of old rags since. I turned off so many things—a large bag of rags, a long piece of old hemp carpet, a cracked iron tea-kettle, and a few other trifles—that I expected to get, at least, a dollar's worth of new tinware. I got only two pint basins! And I meant to mend that old tea-kettle, but the sudden hope that I might buy a new one with the old things I was selling, led me to part with it. I wanted to try a recipe for mending cracked ironware, which I had been saving for some time, and if it proved as efficacious as it promised, I was going to report the case for the benefit of the readers of my "Home Topics." When I told my good next neighbor of my sale, she

said I did no worse than she did. She sold an old pair of pantaloons to the peddler for twenty cents—not a large sum for them—and learned afterwards that a new seventy-five cent knife was in one of the pockets, and went of course with the garment.

Out-Door Games.—Lawn Tennis.

The desirability of exercise in the open air need not be argued; all sensible persons admit it at once, but when they come to the question of "ways and means," the manner of securing this exercise, there will be found great differences of opinion. Some over-practical persons will say, "my girls can get all the exercise they need in making the beds and sweeping the rooms," or that "my boys get exercise enough behind the plow during the day." Such persons fail to appreciate the difference between work and beneficial exercise; those very girls will be as wide awake for a turn at croquet or the boys for a game of ball as if they had been idle all day. Useful exercise, in the way of recreation, is something more than a mere mechanical movement of the muscles. Exercise as such, undertaken as a recreation, only brings its best results when it occupies both the mind and the body, and when the movements of the body are directed to the accomplishment of some end that the mind has planned. The best recreation is that which is directed to the overcoming of some obstacle, or to excelling some rival. Open air exercise to be most beneficial should be social, it ought to allow both sexes to participate, it should be competitive, and unlike any form of work. Croquet acquired its popularity, because it met all the requirements of an out-door recreation. The same may be said of Archery, though it has not become equally popular. But we naturally incline to variety, even in our amusements, and any out-door game to be popular must have all the essentials of croquet. It must be social, easily learned. There must be a demand for skill which calls for the exercise of both mind and body, it must include competition or rivalry, and the outfit and appliances must not be too expensive. Lawn Tennis is all these, and its popularity in England, though the game has been slow in crossing the Atlantic, is but the prelude to that which awaits it in this country. Tennis proper, is one of the games that have a history; it became popular in Europe in the 15th century, and is said to closely resemble, if it be not actually derived from, a game of the ancient Greeks and Romans. In historical works and in fiction in which the scene dates back a few centuries, we find mention of the "Tennis-Court," as the game required a space 112 by 40 feet, and surrounded by a wall 20 feet high on the sides and 30 feet at the ends. It was originally played by striking the ball with the hand, which was protected by a strong glove. In the 15th century, the "racket" was introduced, a strong and peculiarly-shaped battledore for striking the ball instead of using the hand. This caused a change in the name of the game, which was formerly called *paume*, the ball being struck with the *palm* of the hand; but the player with the racket was cautioned by the cry of: *tenez* (pronounced *ten-nay*) which means "hold" or "hold hard," as it required a firm hand, and in time the word became adopted as the name of the game. But the game has been modernized and improved; it is now played upon the open lawn, which is not only vastly more cheerful, but brings the game within the reach of all who have a grass plot of moderate size. The space for the game is still called a court; it is marked out, usually 27 by 78 feet, though the dimensions vary. Across the middle is a net which is stretched between 2 posts; this is 4½ feet high at the posts and 3 feet in the center. The space each side of the net is divided into four parts, each having their names; the balls are about 2½ inches in diameter, of rubber, and variously covered. The Racquettes, or bats, are regarded as a most important part of the outfit, and good players are very particular in their choice of them. They look something like a highly civilized, long-heeled and rather one-sided snow-shoe, as, like that, they consist of a frame-work strung with cat-gut; some styles are of different colored woods and highly polished. These are the materials required for the game; as to the game itself we do not propose to describe it further than to say that, like all such games, there is an attempt of one side to do something with the ball, and it is the object of the other side to prevent its being done. It is of course governed by various laws in the observance and violation or neglect of which the gains or losses are made. The great strength the old game required of the player, in striking the ball with the hand, gives place to skill and dexterity in the modern player, who finds the wielding of the racquette a healthful exercise, quite sufficient for the development of strength of body, and ease and grace of movement. Lawn Tennis bids fair to have a long career and not less popular than that of Croquet.

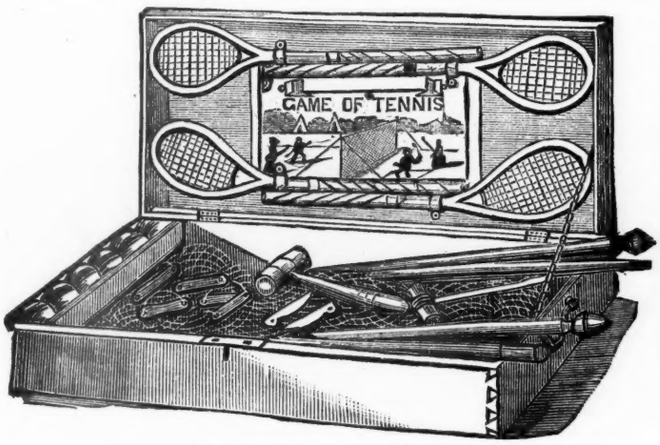


Fig. 1.—A BOX OF TENNIS GOODS.

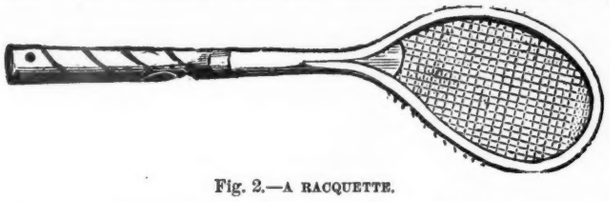
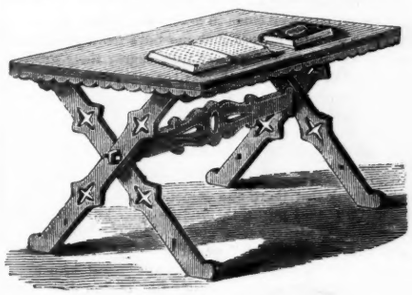


Fig. 2.—A RACQUETTE.

Household Notes and Queries.

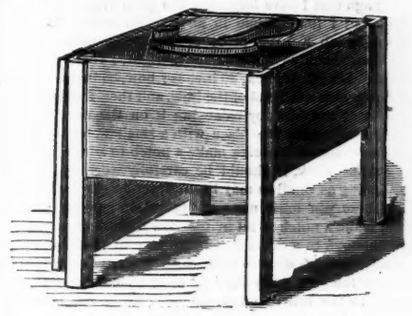
THE CLOTHES LINE.—By many persons the clothes line is looked upon as a general necessity but a very common nuisance—and in many cases the judgment is a just one. The clothes line is proverbially in the way, especially if an axe is to be used in splitting wood in the back yard. This ought not to be. The line should be taken down so soon as the clothes are removed. Of the many devices for doing this the oldest seems to be the best: the simple method of winding it over the elbow and hand, and securing the coil with the end of the rope. The various patent folding clothes bows have the advantage of closing up into a small space when not in use, and some allow of the frame and line, to be readily removed to the house. Whatever the method of suspending the line, let it be as much out of the passage ways as possible.

A HOME MADE TABLE.—The table which is shown in the accompanying engraving, is one that can be constructed in the farm work-shop during rainy days, and thus afford pleasant occupation for the older boys. A light table that can be easily moved, is one that every sitting room should possess—one that can be drawn up to the fire, or in front of the window, and yet one that is not easily overturned. The kind of wood used, and the degree of ornamentation, will depend upon the lumber at hand, the skill of the person, and the time at his disposal. Light wood, like pine, or white wood, serves best for the top, with its narrow edging, while a stronger wood, like ash, will be best for the legs. The whole table may be made of inch stuff, excepting the edging to the top, which should be thinner. A table thus constructed, and afterwards covered with a close fitting cloth, will be a very handy addition to the sitting room.



A HANDY SITTING-ROOM TABLE.

SHOE-BLACKING STANDS.—It is not expected that very much of a shine is to be kept on the "every day" farm boots, but those for Sunday and other special occasions, should have a polish, because it adds so much to the neatness of the person at very little cost. A box of blacking and a brush, with a few minutes now and then, are all the necessaries; but the great trouble is often in finding these three elements: brush, blacking, and *time* all together. Too frequently the blacking and brush are put up in some out-of-the-way place, and often unduly separated, so that it takes too much time to find them, and if found, the brush may be dusty and dirty and the blacking spoiled. All trouble of this kind may be saved by having a small Blacking Stand like the one shown in the engraving, in which the "tools" may be safely kept, and are then always at hand. A thing is handy only when it is at hand, and in little matters like the one in question, this is the all important point. This stand serves a double purpose: as a place to keep the brush and blacking, and when the cover is turned back, a rest for the foot while the boot or shoe is being polished. This is far better than using a chair, both in its being more handy and saving the latter from being marred. The older boys, and the young men especially, should provide themselves with such stands, either by making them, or by purchase, as they can be obtained at the furniture stores in a great variety of shapes, sizes, and styles, some of which make very nice stools, and can be used as a "step" for reaching high objects.



A HOME-MADE BLACKING-STAND.

BOYS & GIRLS' COLUMNS.

The Doctor's Talks.

Several have written about kites; one boy wishes to know how to make such kites as are sold in the stores, and another asks something about kite-flying. In the flying of a kite we have an excellent illustration of an action of force that I have not referred to in these Talks, but which may well come in here. But before we can fly our kite we must make it. Some boys get a great reputation among other boys as kite-makers; their kites always go up, and behave themselves when they get up. I don't know how it is now-a-days, but such boys used to get a great many pennies from other boys, with more money and less skill. As I recollect about the kites of the famous makers of my boy days, they were always

LIGHT AND STRONG,

and I think that there was something about the "belly-band" that they prided themselves upon knowing. The two forms of kite the most common are the "Bow Kite," and the "Three Stick" or "Six-Sided" Kite. By far the handsomest kite in my opinion is the Bow Kite (fig. 1), and I do not think it is altogether because it was the only kind we had when I used to fly kites. To make a kite of this kind that will fly well, requires more skill than the other. All the material should be as light and as strong as possible. For the stick, dry and straight-grained pine; for the bow, a piece of a barrel hoop is generally used, whittled down narrow, but the best is a piece of rattan, which for a small kite may be split. The cord should be cotton or linen, as it is much lighter than hemp of the same size. For paper, boys usually take newspapers, and as there is much difference in the kind of paper these are printed on, you will need to pick out the strongest. Then with some common flour paste, some strong linen thread, a knife and scissors, you are ready to go to work. You may make a kite entirely by guess and have it fly well, but boys should always learn

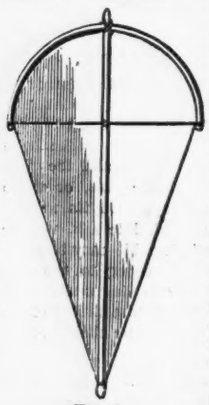


Fig. 1.

TO WORK FROM MEASURE,

when in building a kite, a sled, or a bird house. It is so long ago that I have forgotten the proportions we found best, but I found some in an English book. I made a drawing on a large piece of paper according to the measures, and as the kite looks right, I venture to give them. Length of stick, 40 inches; bow, 30 inches. Make a notch near each end of the bow, and then find the exact center of the bow, by balancing it on the edge of your knife, and mark the place with a small notch; 4 inches from the top of the stick make a notch to admit the bow. As to the stick, it should be carefully worked down by whittling as small as may be, and yet be strong enough, and here you must use your judgment; point the top, and make a notch to let in the bow a short distance, but not enough to weaken it, put the bow in place, and bind it fast with a few turns of thread. Then tie a cord to one end of the bow, carry the cord once around the stick, and then to the other end of the bow, bring the bow into shape; then fasten the cord tight; the distance from each end of the bow to the stick should be 10 inches, and the string should cross the stick just 10 inches below the point where the bow is fastened to it. Now pass the string from one end of the bow down to the bottom of the stick, through a deep notch, made there for it, then up to the other end of the bow, make it fast, and the frame is finished. To put on the paper, lay the paper on a table, and if one piece is not enough, join two by pasting them together with a lap of about half an inch. Cut the paper an inch larger every way than the frame. Before pasting, cover the table with newspapers, so as not to soil it with paste. At the ends of the bow, and at several places between the two ends, cut notches through that part of the paper that is to be turned over, so that it can be pasted without any bad wrinkles. Apply paste to the inch margin, and turn it over neatly, and let the paste get thoroughly dry before handling the kite. Some make a point to the kite; if this is wanted, measure four inches upon the bow, each side of the stick, and cut a small notch at each place, and make a notch at the top of the stick. Tie a piece of cord at one of the notches on the bow, pass it over the end of the stick to the other notch on the bow, and tie fast; this will make a spear-like point when covered with paper. Your kite is now ready, except two very important things, namely, the

BELLY-BAND AND THE TAIL.

We may call that part of the kite upon which the stick does not show, the front side. You need to make a small hole through the paper from the front, on each side of the stick 10 inches from the top of the stick, and two more holes 10 inches from the bottom; the cord is to be passed through the upper holes with a turn around the stick, and tied very firmly—then through those below, leaving the band quite slack. The string of the kite is to be tied to this. The cord for the tail is tied in a similar manner to the stick at the bottom. The tail is made variously; sometimes one heavy paper tassel is fastened at the bottom; sometimes a long strip of cloth is used, but I don't think anything looks so well when the kite is up as the old fashioned bob-tail; pieces of paper, about 3 inches square, are folded up and fastened upon a string by a loop in it that every boy knows how to make. The tail may be very long (sometimes 15 times as long as the kite) and light, or shorter and heavier; the size is best learned by practice. Some make wings to the kite; these are merely paper tassels, attached at each corner of the bow, and are of very little account.

THE THREE-STICK, OR SIX-SIDED KITE,

Is, I find, thought by some of the youngsters of the present day, to be much the best kind of kite, but to those brought up on the other kind it looks like a very clumsy affair; it is, I think, the kind that one boy refers to as the kite "sold in the stores." These kites, as I have seen them, are made of three light sticks; these have notches at each end and are tied together, as in figure 2. After the tying is securely done, the cord is passed from the end of one stick to that of the next, and so on all around, and made fast at each notch. This frame is then covered with paper, as I described for the other. When dried, the belly-band is to be arranged, and this is quite different from the other, as seen in figure 3. Holes are made through the paper and cord passed through and tied around two of the sticks in such a manner as to make a loop above, and a broader one below, a cord connecting these two loops forms the belly-band, to which the kite-string is to be fastened. A similar loop must be made to which to tie the tail, as you see at the bottom of figure 3; it is made fast near the lower ends of the sticks, its ends passing through holes in the paper. The tail, as in the other, may be according to fancy. A great variety of fancy kites are made, especially by the Chinese, among whom kite-flying is not confined to the youngsters, but is a favorite amusement of the grown up people. Travellers tell us that on certain days all the people engage in flying kites, and the air is filled with monsters of all sorts of droll shapes, from butterflies to dragons; they say it is a very strange sight to see old men with spectacles on their noses, flying kites with as much earnestness as if their happiness depended on it. Sometimes these strange

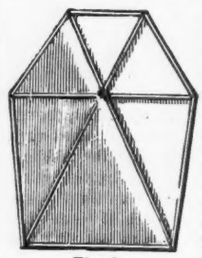


Fig. 2.

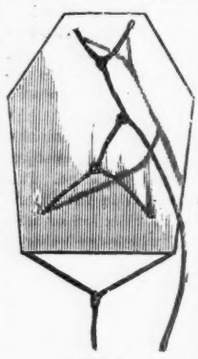


Fig. 3.

CHINESE KITES

are imported; but they are usually of the smaller kinds and shaped like butterflies or birds; those that I have seen have the frame work of split bamboo or rattan, and covered with a paper very unlike anything we have, and I think that some are covered with a very thin cloth. They are ornamented by painted designs, the most common being large eyes. They probably put eyes on their kites for the same reason that they put them on their *junks*, as their clumsy vessels are called. These always have at the bow a pair of enormous staring painted eyes. Upon being asked why they made eyes upon the junks the reply was: "No hab eyes, how can see?"

IN FLYING THE KITE,

you need string, in fact, as the boys say—"no end of string," and here as in everything else about the kites "light and strong," will apply to the string. It is not easy to get a kite up in a poor wind; but if there is a good breeze and you have a good kite it will go without trouble. All of you who have raised a kite know that the best way is to let another boy hold it, while you, having let out a good length of string, start and run against the wind, when instead of following along after you the kite will go up. Why it should *rise*, and if the wind blows, and you give it string it should keep going up, is a matter we must leave until another time; it has taken us too long to make our kite for us to fly it now. But in kite-flying let me give the boys—and girls too—

ONE SERIOUS CAUTION.

Never fly a kite in the road. Nothing so frightens horses as to see a strange object *above* them; I have seen horses that would not mind the noisiest rail-road train, made perfectly frantic by a glimpse of a kite in the air at no great hight. There is nothing that will so thoroughly frighten a horse as a kite. This should be borne in mind when enjoying the sport, for it would make you very unhappy should your pleasure be the indirect cause of a serious injury to some one, as might be the case.

Picture Puzzle.—This is a rather strange looking shrub, and the animal—fox or woodchuck we will suppose—at the base appears to be in trouble, one of his paws having found its way into a steel trap. There is

still more to the picture, which, no doubt, all will be able to see. Much of the pleasure, to us, connected with this picture, is that it was designed by a little boy, and the sketch was sent to us to see "what we thought of it." How do you like the ingenious picture? Does it *catch* you?

Our Puzzle-Box.

CHARADES.

1. My first is a cover just twisted around.
My next is a fair lady's name.
My whole a most awkward position is found.
May you never be placed in the same.

2. My first names a certain class of individuals; my second is an exclamation; my third is a kind of dwelling, and my whole is a fish. AUDAX.

3. My first in winter oft you see.
My next near you is sure to be.
My whole is found on the shore of the sea.
CARTER.

NUMERICAL ENIGMAS.

1. I am composed of 22 letters:
My 9, 19, 8, 21, 12, is a piece; so also is
My 13, 20, 6.
My 1, 18, 19, 22, is something sacred.
My 15, 17, 7, is generally despised.
My 5, 10, 18, 3, 14, is much used in building.
My 11, 4, 19, 12, 3, is a girl's name.
My 16, 2, 17, is a boy's plaything.
My whole is a well-known proverb. MAMIE.

2. I am composed of 32 letters:
My 4, 14, 31, 28, 8, 24, 3, 9, is an Egyptian vegetable.
My 13, 30, 7, 23, 12, 9, 30, 2, was a queen of Persia.
My 17, 15, 30, 15, 22, 6, 23, 21, was a prisoner with Paul at Rome.
My 23, 10, 3, 32, 16, 11, 21, 1, was a precious stone in the Highpriest's breastplate.
My 26, 14, 23, 15, 27, 25, 20, 12, was a city of Macedonia.
My 29, 5, 18, 10, 29, 27, 5, 19, is a bitter herb.
My whole is a verse of Psalms. ISOLA.

ALPHABETICAL ARITHMETIC.

L N S R) B E G O A K G S (E K S K N
O E L E
L S R R A
L S A L O
L L G K G
L S A L O
L A G K S
L L B A L
E R B

DOUBLE ACROSTIC.

The initials and finals form a bad habit in reading.
1. Ample. 2. A precious stone with head engraved on it. 3. A people. 4. A number of persons in company.
WILKS.

ANAGRAMS.

1. A Count? O music!
2. Saves Notaries.
3. Patent toes.
4. Spruce brides.
5. Tidy vail.
6. Peter, mind deer.
7. Rob's chip chair.
8. Do show a finger.
9. Metal portion.
10. Drew ranges.

DECAPITATION.

(1) Entire I'm found on many a farm,
And when I've lost my head,
(2) I'm useful found my whole to cook,
And turn it into bread.
(3) Once more I must beheaded be,
Would you enjoy your food,
Unless I helped you with the bread
'Twould do you little good. E. J. D.

CROSS-WORD.

My first is seen in autumn, but never in the fall;
My next is seen in cricket, but not in bat or ball;
My third is in the primrose, but not in hedge or bower;
My fourth is in the fortress, but not in wall or tower;
My fifth is in the forest, but not in bush or tree;
My sixth is found in laughter, but not in song or glee;
My seventh is found in butter, but not in cream or milk;
My eighth is seen in muslin, but not in wool or silk;
My ninth is found in herring, not in all kinds of fish;
My tenth is found in platter, but not in cup or dish:
My whole is a misfortune,
No matter how it came,
Sometimes attributed to fate,
E'en though yourself to blame.

PI.

A makerr fo Peticane Rilveel si ta cone soulimun, itrymoon dan lymeit: "spectre het sabrestremman fo nay hotnes icecnenocs chiwh odbuts, chiwh ksese, chiwh kesil treteb ot ster ni thaw si ugave, dan veen ot tarcidtonc stifle, hant ot figsidrne het nownunk hurtt yb vignig ti tafursee exdif dan reshapp thifunfaul."

METAMOREMS.

It is a long time since we had any of these puzzles, and as you may have forgotten what the various letters, as old Roman numerals, stood for, and as they are not to be found in every dictionary, we give them here.

A—500	G— 400	N—900	T— 160
B—300	H— 200	O—0 & 11	V— 5
C—100	I— 1	P—100	W— 55
D—500	K— 250	Q—500	X— 10
E—250	L— 50	R— 80	Y— 150
F— 40	M—1000	S— 7	Z —2000

(Of course the W was not used in Rome, but we make two V's of it, and credit it with 55 for our own use and benefit.) *Example.*—16001005002000. Ans. Topaz (160—0—100—500—2000).

1. 150500550900. 5. 20001000250. 8. 500501000200050
2. 3002508015050. 6. 5150505001900. 9. 300802505005000
3. 500900400. 7. 1000900525010. 10. 10050500150
4. 40080160150.

ANSWERS TO PUZZLES IN THE MARCH NUMBER.

SCATTERED SQUARE.

PLOW
LOVE
OVAL
WELL

METAGRAM. — Master (or stream); out of which may be made the words—as, sat, at, tea, a, rat, meat, stare, east, smart, set, star, steam, rate.

CHARADE.—Thousand.

CROSS-WORD.—Be industrious.

BIBLICAL ENIGMA.—Remember now thy Creator in the days of thy youth.

ANAGRAMS.—1. Mythological. 2. Frontispiece. 3. Inordinate. 4. Influences. 5. Substantial. 6. Unfortunate. 7. Engineers. 8. Impossibilities. 9. Hybernating. 10. Froiicsome.

SYNCOPATIONS.—Blink, link, ink, in.

CONCEALED ARTICLES.—1. Kennel. 2. Spade. 3. Hoe. 4. Rake. 5. Well. 6. Shovel. 7. Pail. 8. Bench. 9. Stool.

TRANSPOSITIONS.—1. Baker, break. 2. Sister, resist. 3. Medal, lamed.

DOUBLE ACROSTIC.

Monument—Memorial.

M— ushroo —M
O— bscur —E
N—ottingha—M
U— mb —O
M— andato —R
E— mpol —I
N—icaragu—A
T— rivia —L

DROP-LETTER WORDS.

1. Imprisonment. 2. Malevolent. 3. Consternation. 4. Circumstance. 5. Landscapes. 6. Uncongenial.

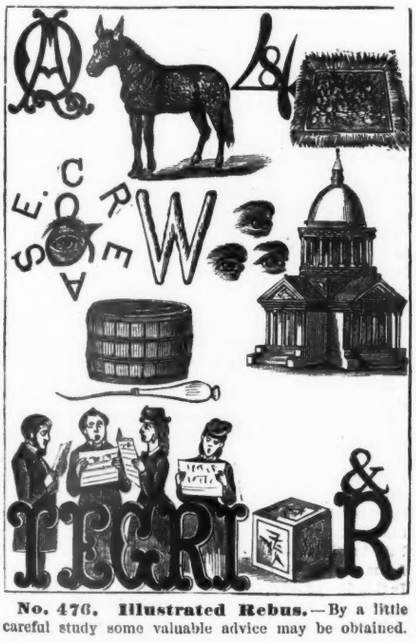
WORDS ENIGMATICALLY EXPRESSED.

1. Barbarous. 2. Something. 3. Farthing. 4. Kindred. 5. Equipage. 6. Tendons.

BLANK ANAGRAMS.—1. Brigade. 2. Rheumatism. 3. Illuminator. 4. Gladiator. 5. Metamorphoses. 6. Troublesome. 7. Envenomed. 8. Together.

NUMERICAL ENIGMA.—Arithmetic.

ILLUSTRATED REBUS, No. 474.—As the whirlwind passeth, so is the wicked no more: but the righteous is an everlasting foundation.—Proverbs x., 25.



No. 476. Illustrated Rebus.—By a little careful study some valuable advice may be obtained.

A River Hunt.

When DeSoto discovered the Mississippi River, it is said he was almost beside himself with delight, and felt abundantly paid for all the time and trouble given to the search. It is hoped that a like feeling, though in a smaller degree, may fill those of our young readers that may now set out on a River Hunt. The "large streams of water flowing through the land" are brought much nearer together on our peculiar map than they are in nature, and again they do not have that resemblance to each other that the ordinary geography gives them. The first river which we will set out to find rises in a lake in the western slope of the Rocky Mountains, and after flowing south some distance, forms a part of the boundary between a State and a Territory. It is full of remarkable bends, rapid throughout, and has cataracts in the mountain gorges. Its length is 1,200 miles. The tributaries are noted for the length of their names.—No. 2. After a winding course of about 1,500 miles it flows by a delta into the Atlantic Ocean. The delta is of great size, and the mouths are very numerous. The land drained by this river is 250,000 square miles, most of which is occupied by a vast woodless plain. There are two remarkable rapids in the stream in which the natives are often dashed to pieces in their attempts to pass them in canoes.—No. 3 has its source on the borders of the United States, and after flowing in a southerly direction, passes into a large Sound, and thus to the ocean. On its way it forms the boundary between two important States, and the valley through which it afterwards flows bears its name, and is noted for its fine farming land. The State is also of the same name.—No. 4 is a small river of only 135 miles, and a tributary to one that flows by the side of the largest island city in the world. This short river flows through one of the finest regions in this country. Its name comes from a tribe of Indians which once lived in its valley.—No. 5 begins at the foot of a great lake, and afterwards serves as a portion of the boundary of the United States. After a run of 750 miles, it expands into a gulf which bears the same name. If not the longest, this is one of the largest and most important rivers in the world. It is noted for its beauty, celebrated cities, and many islands. A trip down this stream is now frequently taken by pleasure seekers.—No. 6. This great river is, like many others, formed by the union of smaller ones. It flows through treeless plains, and in many places the banks of the river are very high and steep. Sometimes these gorges are 7,000 feet, or almost a mile in perpendicular hight. The country along this river is noted for its relics and remains of races of people that lived many hundred years ago.—No. 7 is one of the smaller rivers, but it has a *big* name. Its course is south, and many of our boys and girls will have to go South to find it. This is no reason why it was put near the bottom of our map. It flows into a bay, and then the water passes into a gulf.—No. 8. This is a small river wholly within the borders of a single State, and empties its water into the ocean near a cape of the same name.—No. 9 is one of the main branches of one of the leading tributaries of the largest river in the new world. This is a very familiar river to those who live in a large city, noted for its iron foundries and the smoke that is constantly hovering over it.—No. 10. The leading river of a large lumber State. It receives a number of tributaries on its way to the bay of the same name, which is of Indian origin, as is the case with many American rivers.—No. 11 flows through a comparatively level country, and adds its waters to a great south-flowing stream. The country drained by No. 11 has suffered greatly from the grasshoppers in years past.—No. 12, wholly within a State better noted for its maple sugar, fine sheep, and green color of its mountains, than the extent of its rivers—in fact, this one is not generally called a river. It flows into a large lake of remarkable beauty, and noted for its historical associations. Some great battles were fought near this river something over a hundred years ago.—No. 13. "Last but not least." The name is long, and it should be to correspond with the river, which, with its tributaries, is the longest in the world. The name of this river, sometimes spoken of as a "Father," is noted for something which we will put to our young readers: "What is that which runs and never flies—legless, wingless, with four *eyes?*" To go from one end of this mighty stream to the other—from the little clear lake up in the North to the great gulf in the South—all along through that great Valley, with all its fertile acres, which is the pride of our great land—would be a long and a pleasant journey; but having discovered—or at least made the discovery easy—we will leave the readers to decide the matter of further travel for themselves.

A MAP OF SOME STRANGE LOOKING RIVERS.

Another of the 'Ologies.

Some one asks, "Why don't you have some more of those 'Ologies?" There are a great many "'Ologies," and most of them are too hard for boys and girls to understand. In February we selected *Pomology*, because we thought—yes! we knew, that fruit was a subject about which young people liked to hear. The study of the various kinds of strawberries, especially when they are ripe, is pleasant—to learn to distinguish in taste between the finest kinds of pears, peaches, and grapes, is both interesting and agreeable. For young folks, there is probably no 'ology that stands ahead of Pomology, but if we must talk about another 'ology, let us select ZOÖLOGY. This word means a "telling about animals," and a person who can tell about animals—that is, can say a good deal concerning animals—is a *Zoölogist*. "But why Zo-ologist?" you will ask. The "ology" part of the word you understand, the first part is also from the Greek, from *Zo-on* (in two syllables), the Greek word for an animal. A boy or girl that makes a study of animals may in time become a Zoölogist. There are a number of men, and some women too, who spend most of their time in finding out all they can about various animals, and some of the animals they study are so small that they can not be seen without the use of the magnifying glass or microscope. "But what is an animal?" some one asks. That is a harder question to answer than you think for. All living things—all things that grow and

die—are either animals or plants—so the Naturalists say. Now, what is the difference between an animal and a plant? It is easy to see that a cow is not like a rose bush; or a mouse has not much in common with a maple tree—there are a great many differences between these; but when the *Zoölogist* comes to study the little, minute forms of life, so small that he must use a microscope—so small that a drop of water could contain thousands of them—he says he can not tell the animal from the plant. But for our purpose an animal is a living being that can move around and has feeling; eats, drinks, and sleeps. How many animals are there on a farm? Some will guess five; others ten, and some will go as high as fifty.

Fishing and Fishers.

There is something about fishing that is very attractive to youth. The very thought of pulling out a great fish—hand over hand—is enough to make a boy's heart go *thump!* and make him wish to leave his work, or his desk at school, and try his luck with a baited hook in the lake or the running stream. It has always been so, and it is not likely that the love for catching fish will ever die out. I remember as if it were yesterday the first time I ever caught a fish on a hook. It was a small lake perch, a very appropriate fish for a small lad to get on his hook. But it was not long before I added another to my string, after which fortune did not seem to favor me, try as I best could, and no more were taken. Before this, I had done a little fishing on a very small scale in the way of hand-catching among the stones in a little stream that flowed through the farm. With my shoes and stockings on the bank, and my trousers rolled tightly up over my knees, I would wade along the stream until some frightened minnow was seen to dart under a flat stone, when with hands extended around the opening I would corner the poor fellow—provided he did not get out some back way or pass like a flash between my feet or fingers. Sometimes I have succeded in catching much more than I bargained for, when some old crab grasped my toes or fingers as they extended into its secluded hiding place.—But the little slippery fish did not always get away, and in the course of an hour or so I sometimes had a number of them in my little tin pail. Frequently I made a small pond for my fish and put them in it; but better still—for me at least—was the watering trough at the well near the barn, into which I put my minnows, and with stones and pieces of brick made them a place to run under to get in the shade and out of the sight of the horses, and I may add, away from the eyes of a person who came with the horses. But it did not matter much what I did with my little fish, something would happen to them, and it was frequently found necessary to get a new supply from the brook to keep up the stock. In the course of a few years I outgrew this pail and finger-fishing, and with a line made of strong thread—shoe thread—a hook which had once served as a pin, and a few worms from the chip dirt or from under stumps, overturned many times a year for bait, I would go with the neighboring boys for an afternoon of fishing in the pools and deep places in the bends, and at the foot of large trees in the same brook from which the minnows were taken when I was too small to handle a line, but too big to stay at home. The artist has given us a view of one of these fishing days—one of those Saturday afternoons in May when fishing is so much enjoyed, because it comes so near to doing nothing—a kind of occupation which the warm, sultry days, so frequent at this season, render doubly inviting.

The stream is not a large one, not to be compared with the rushing, roaring, boisterous freshet-river of a few weeks ago—now so faint in its music and so lazy in its motion. The best pool has been found—it is not always the largest—and by the looks of things the boys have been at work for some time—but still they come—I mean the fish, not the boys. What a nice fish the largest boy in the front of the picture is taking from its watery home. How he enjoys the work of bringing him to the shore; but on the other hand, what a new world is suddenly opened to the eyes of the astonished fish, suspended there in mid-air above the pond! It will be observed that the fisherman on the left of the pond does not take any delight in the capture of this fish. The truth is, he has had "bad luck," and it begins to tell upon his face, which is growing long as the sun is getting low. He has either had a bad hook, poor bait, unfavorable light, a shallow place, put his line too deep, or held his line wrong in some way, so that the fish have gone to more inviting hooks. It is sometimes hard to see just why the boy at your side will catch the fish right away from your hook. The little lucky fellow on the opposite side of the pool has a fine string of fish, and is evidently telling something to that effect to his unfortunate friend. He appears to be so well satisfied with his afternoon's work that he will soon go home and exhibit his catch to the older members of the family—and perhaps find out how the fish taste, when nicely cooked, before he goes to bed. The dog, though only a "looker on," evidently "sees most of the game," and is as much pleased when a good fish is caught as any one else in the fishing party. From the way the nearest cow pricks up her head and ears, there must be some shouting being done by the boys—over the capture of the biggest fish of the day. But the boy must look out or it may get away and *flop* into the pond again, as one is seen to be doing, to a boy's dissatisfaction. Many fishermen believe that when a fish thus regains the water, and is in the society of his uncaught friends, he communicates his experience to them, and cautions all the rest against taking any tempting worm or fly that may be presented. From that hour fishing is dull work. "They won't bite." So the story goes. That there is a fish-sympathy, though "cold-blooded" in its nature, is not unreasonable to believe.

I can not linger longer over this scene of my boyhood pleasure; and the boys must soon go too, and drive up the cows and see to their other chores; but as a last word, while they are trying for their final *catch*, the "last but not least"—the "just one more"—let me say that there is much fishing which they will find through life, though it may go by other names—it may be a hook well baited and thrown into the busy whirlpool of business—for money, or into society—for friends, station, honor. In this fishing there may be *some* "luck," but in the long run it is the patient, untiring, upright, honest fisherman that goes to his rest in peace. UNCLE HAL.

THE BOYS' MAY HOLIDAY AT THE POND.

Suppose we should count them, using the number of legs as a guide. How many with four legs?—All will mention the horse, cow, pig, sheep, and dog. That makes five four-legged animals. But there are the mice and rats that most barns contain; the woodchuck is down by the woods, and near him there may be the squirrel, the weasel, the coon, and that bad smelling fellow, the skunk. If we look closely, there are other four-legged animals to be found, but let us go on. Are there any animals with three legs? Not unless one with four legs has lost one in a trap or some other way. Two-legged animals are numerous, and some of them very important—one does not have to go very far from himself to find one of these. There are the birds, and the chickens, geese, ducks, turkeys, etc., all of which are birds.—Are there any one-legged animals? The only one-legged thing common on farms is the milking stool, but that not being an animal, can not be counted here. We shall have to give up our search for animals with only one leg. Here we come to a thought. Are legs in pairs in all animals? We have found them thus far in twos and fours. Are there any animals on the farm with six legs? Just look at the insects; the flies, beetles, bugs, butterflies, etc., of which there are hundreds of kinds on every farm—they all have six legs. If spiders are examined it will be found that they have four pairs of legs. But we can not go all the way from the two-legged animals to the "thousand-legged worms," and see if they are all in pairs, but must take the word of those who have looked over the whole list—the Zoölogists tell us legs are always in pairs.

If we should take the eyes and ears, the teeth and brains, and all the other parts, and find out about them in the thousands of kinds of animals, we should then become Zoölogists. The subject of Zoölogy is a very large one, but no children have the chance of learning about all sorts of animals like farmer's boys and girls. Some of our best Zoölogists have lived upon farms while young. We wish all our many young readers would interest themselves to study animals, and in time become Zoölogists, so far as having a knowledge of common things about common animals will make them such.

Results of Vivisection.

Interesting Experiments—Prof. Mott shows how People are Taking Poison in their Daily Food—A Prolific Source of Dyspepsia Scientifically Demonstrated.

From the New York Tribune.

A series of highly interesting experiments with dogs has been lately made by Prof. Mott, and in the *Scientific American* of Feb. 7 a detailed account is given. The disclosures are so unpleasant and startling, coming home, as they do, to every one, that we believe they should be given the greatest publicity. The effort Dr. Mott is making to purify our articles of kitchen use should receive the support of every thinking man and woman. There has been too much indifference of this subject—an indifference that has resulted in Americans earning the title of "a race of dyspeptics." Poison year after year is introduced into the stomach with a criminal disregard to consequences that is appalling. If every purveyor of domestic supplies will carefully consider the result of Dr. Mott's experiments, as detailed in the *Scientific American*, one of the greatest, if not the greatest, of these evils will be corrected.

Dr. Mott says: "The introduction of alum in flour, for various purposes, has been a trick of the baker for the past 100 years. Fortunately for society, its introduction is limited now to a few unscrupulous bakers. In England, France and Germany it is an offense punishable by fine and imprisonment to use alum in any connection with articles of food. It should be so in America."

The Royal Baking Powder Company, of this City, a long-established corporation, celebrated for the absolute purity of their goods, some time ago commenced a vigorous warfare against many of their competitors who were indulging in hurtful adulteration. The contest excited great interest in scientific circles, in which Prof. Angell, Dr. Mott, and other leading lights took a very prominent part. The experiments of Dr. Mott are a result of this discussion, and go to prove conclusively that the most dangerous adulteration that a community has to guard against is alum in baking powder. In his paper, the Doctor says: "It was with difficulty I found a suitable place to conduct the experiments so that the animals would not disturb the neighborhood; but, through the courtesy of the Commissioners of the Dock Department, I secured a shed on their premises, foot of Sixteenth-street and East River. This shed I had completely remodeled into a suitable house, having the dimensions of about 16x14x12 feet. Sixteen stalls were made inside, having the dimensions of 3½x2x2½ feet. The bottom of each compartment was covered with straw, making a pleasant bed for the dogs. I then secured 16 dogs from the Pound, which were all carefully examined to see if they were in a perfect state of health. None but the strong, healthy dogs were selected. The breed, age, food, color, and weight of every dog was carefully noted. Each dog was then confined to a stall and securely chained, and they all received a number, from 1 to 16. I commenced my experiments on the 9th of September, and finished Dec. 3. My assistant was with the dogs from morning until night, and never left the animals without first securely bolting and locking the dog-house. No stranger was allowed to enter the house unaccompanied either by myself or my assistant, and the dogs never received a mouthful of food or anything else from any one except from my assistant or myself. I will now detail the result of my experiments:

"Dog No. 1—Breed of dog, coach. Age, 1 year. Health, perfect. Food, bread and crackers. Color, spotted black and white. Weight, 35 pounds.

"To this dog, on the morning of the 9th September, was given eight biscuits at 8:10 o'clock. The biscuit were made by myself as follows: One quart sifted flour, 20 teaspoons alum baking powder, 2 cups water, 1 tablespoon butter, 22 biscuits made, weighing 27 ounces; time of baking, 20 minutes.

"At 11:30, just three hours and twenty minutes, the dog was taken very sick, vomiting profusely; his vim and brightness of eye had departed, and he trembled considerably in his limbs."

Experiments were then made upon three dogs with biscuits containing only 10 teaspoons of alum baking powder. The result indicated that some animals are more liable to yield to the effects of poisonous substances than others are. When, on the other hand, three other dogs were fed with biscuits made with pure cream of tartar baking powder, no ill effects were experienced. The ate and ate with an evident relish, day after day, and even whined for more.

It was next necessary to discover what effect alum has on the solvent power of the gastric juice. In order to obtain some pure gastric juice, a curious device was resorted to. Dr. Mott sent several dogs to Prof. Arnold, Medical Department of the University of New York, who inserted a small metallic tube directly through the skin and into the stomach of each one of them, when the dogs were in a perfectly healthy condition. Prof. Arnold sent to Dr. Mott some gastric juice, which was produced by tickling the lining of the stomach of the dogs with a feather or glass rod, which caused the gastric juice to flow out of the tube into a receptacle placed underneath the dog to receive it.

Dr. Mott, aided by Prof. Schedler, then began some experiments with the four samples of gastric juice, which he had received from Prof. Arnold, to discover the effect of the gastric juice in which alum has been dissolved upon fibrine, a white, very easily digested substance having a basis of coagulated blood. The fibrine was imperfectly digested, and the experiments were very important, as showing that alum can check the digestion of so easily digested a substance as fibrine. They indicate, therefore, how dangerous it is to introduce these two salts into our stomachs, if we do not wish to excite indigestion and dyspepsia. Further experiments showed that the digestive power of the gastric juice is entirely destroyed by alum, so far as its power of dissolving the more indigestible substances, like the boiled white of an egg, is concerned.

Dr. Mott then determined to learn whether alumina could be found in the various organs of the body if a dog was fed with hydrate of alumina. He found a considerable quantity of the stuff in the blood, liver, kidneys, and heart.

The Doctor goes on to describe the different symptoms exhibited by these dogs as they passed through almost every phase of animal agony until they were left in a complete state of physical prostration. To those especially interested in the details of this subject the article in the *Scientific American* supplement will give most complete information, and we will spare the sympathetic reader the account of the sufferings of these dumb brutes.

Dr. Mott's conclusions, after making these experiments, are of vital interest to every one who either makes or eats bread, and therefore concern all.

"These experiments," said he recently, while speaking before the American Chemical Society, "clearly demonstrate that the salts left in the biscuit when a cream of tartar baking powder is used are perfectly harmless, but when an alum baking powder is used are very dangerous, for in every case where dogs were fed on biscuits made with such powders the dogs were made very sick, causing them to vomit profusely, lose all energy, and show weakness in their limbs."

It is a clear and triumphant corroboration of the assertions of the Royal Baking Powder Company, and entitles them to the gratitude and support of the community they are endeavoring to protect. As they claim, and Dr. Mott has shown, bread made of alum is totally unfit for human or animal food. 'Tis true, in the bread of domestic consumption there may not be as large a proportion of baking powders as was in the bread used by Dr. Mott, and that accounts for the fact that the symptoms in the reader are not so well defined as they were in the experiments in question. How many there are of our immediate friends suffering from this evil, scientific investigation will alone reveal; but many a lingering and suffering invalid, with no defined idea of his trouble, can easily trace it to its source by stopping the use of alum powders, substituting some brand like the Royal Baking Powder, whose manufacturers have a competent chemist in their exclusive employ, who rigidly analyzes every ingredient before its incorporation into their powder. The old cry of "honesty being the best policy" may be worn threadbare, but its truth will hold forever, and while adulterations and short weights abound, it is a pleasure to see at least one in the trade strenuously endeavoring to give full weights and pure goods.

The advertisement of "Aultman-Taylor" Threshing Machinery, which attracted such general attention among farmers and threshermen in our April number, will appear again in June.

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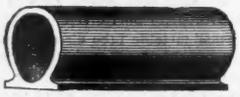

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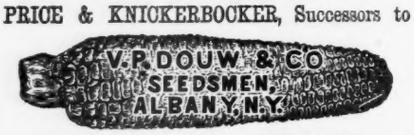

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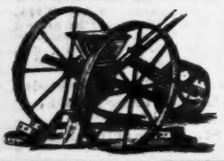

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PATTEN & WADE, Publishers, 47 Barclay Street, New York.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from Page 179.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing articles referred to in the "Basket" or elsewhere, can always be supplied and sent post-paid for 15 cts. each, or $1.50 per volume.

The German Edition.—All the principal articles and engravings that appear in the *American Agriculturist* are reproduced in the German Edition. Besides these, there is a special department, edited by an eminent German cultivator. Our friends can do us a good service by calling the attention of their German neighbors and friends to the fact that they can have the paper in their own language, and those who employ Germans will find this Journal a most useful and acceptable present.

Bound Copies of volume 38, and of every previous volume back to Vol. XVI. (1857), neatly bound, with gilt backs, Index, etc., are supplied at $3 each (or $2.30 if to be sent by mail). See Publishers' Notes, 2d cover page.

Clubs can at any time be increased by remitting for each addition, the price paid by the original members; or a small club may be made a larger one at reduced rates, thus: One having sent 6 subscribers and $7, may afterwards send 4 names more and $3, making 10 subscribers for $10.00; and so for the various other club rates.

Terms to New South Wales, New Zealand, Australia, Africa, etc.—To several inquirers. Under the latest revision of the Postal Union Regulations the price of the *American Agriculturist* (either English or German edition), including postage *prepaid* through, will be covered by 7 shillings sterling per annum. This applies to the above countries, and to all others embraced in the General Postal Union. The simplest mode of remittance is by Postal Money Orders, payable in London, to the order of Orange Judd Company. These can be readily cashed in N. Y. City at a slight discount, which the publishers will cheerfully pay. For Club rates, (postage included), see our second cover page, and reckon 22 cents to the shilling sterling.

Is Corn the Cause of Contracted Hoof?—"B. J. G.," Nashua, Iowa. Corn is a highly carbonaceous food, and as this kind of food is used chiefly for maintaining the animal heat, too much of it is apt to cause disturbance of the system. The result of overfeeding with corn, is to make an animal feverish, and the feet of a horse are tender spots, on account of the sensitiveness of the lamina. This is perceived in the easy foundering of a horse, by overfeeding. A result of fever in the feet, is contracted hoof; so that corn may be the cause of contracted hoof. To feed some bran will avoid this.

Coal Oil Barrels.—"W. W. H.," Blair Co., Pa., wishes to so cleanse barrels which have had coal oil (kerosene) in them that they may be used for vinegar, cider, etc. He has tried burning them out, but without success. If a thorough burning will not make them fit for use, we doubt if anything else will. If any reader can help our friend, let us hear from him.

Sheep Disease in England.—The cable brings an account from the U. S. Consul at Gloucester, Eng., of a serious outbreak of a disease among sheep, in several localities. In this instance, it is "Rot," or "Sheep Rot," and quite distinct from Foot Rot. The Rot is due to "Flukes," which are leech-shaped worms, often found in the gall-bladder, or ducts and liver of sheep. Small numbers of these may be present without manifest injury to the sheep, but when they occur in large numbers, the whole system of the animal is so disorganized, that the term "Rot," best expresses its condition. It is caused by poor food, low damp pastures, and water from ponds and pools. When it occurs, its course is rapid, and no treatment will save the animal. Prevention is possible, by avoiding the causes. One part of the life of the Fluke is passed within the bodies of fresh water snails, etc., and from these it in time reaches the interior of the sheep; for this reason it is important to supply sheep with well-

water, or other water free from these animals. Sheep in which the attack does not amount to Rot, have been cured by a mixture consisting largely of Salt and Spirits of Turpentine. Indeed, the free use of Sal is regarded as an important preventive. We learn from a correspondent in Oregon, that Rot has within a short time made its appearance in some localities in that State.

Bronzed Oranges.—The fruit in the Orange groves of both Florida and Louisiana has of late years been much discolored. The rind becomes, either in part or completely, colored a dark brown. The cause of this discoloration has not thus far been ascertained, a careful examination by those expert with the microscope having failed to detect anything like fungus, the cause of so many fruit troubles. It does not appear to prevent the fruit from coming to maturity, or to in the least affect its quality. We recently saw some boxes unloading, on which was marked in conspicuous letters, "Genuine Florida Bronzed Oranges," with the grower's name, etc. This is shrewdly making "a virtue of necessity," and it may be that those whose groves are now free from the defect will be looking for a method by which their oranges can be "bronzed," and thus increase in value.

The Cost of Tillage.—Other things being equal, that land which is tilled with the least expense, is the best land. It is not the size of the crop that determines the profit in farming, but the excess of the income over the outgo. If it costs more to keep a corn field perfectly clear from weeds than the value of the increase of the crop caused by that culture amounts to, then, so far as the corn crop is concerned, such excess of corn is a loss. But the influence of the care bestowed on one crop upon those that follow it must not be overlooked. It may be the best system that grows a certain crop at a loss in order to raise succeeding ones at a profit. The value, and, therefore, the cost, of tillage, in a well established system, depends very largely on the time and place that is done.

Snakes Swallowing their Young.—While it is a well established fact that most snakes do swallow their young, it has been doubted that this was done by venomous snakes. We recently gave an account, showing that Rattle Snakes have this peculiarity, and now comes Mr. C. C. Lobingier, of Alleghany Co., Pa., with a case, or rather cases, in point, which must add the Copperhead to the list of swallowers of their young. Mr. L.'s account is given with great precision and circumstance of time, place, and persons, but as we have no reason to doubt his statements, we need give only the results. On Aug. 26th last, on going home from the station he came across a boy of 14, who had just killed four large Copperheads, which he had found together at the foot of a stone wall. Noticing that two of the snakes were much puffed out, he opened the largest with his penknife, and found its belly full of young Copperheads; this led to the opening of all four, and every one had young Copperheads, and he took out in all 34 young snakes from four old ones, but did not think at the time to note the number from each. The young snakes were from 3¼ to 6 inches long, and all showing more or less life. This testimony added to that given last month would seem to be sufficient to settle the question that venomous snakes, like others, do swallow their young.

Teeth as an Index of Age.—"B. A. B.," Cerro-Gordo Co., Ia. The teeth are an indication of the age of animals to a certain extent. They are not exact to a month, or even six months. Animals differ in precocity, and some have their teeth earlier than others. In a heifer, the second permanent incisor appears at 28 to 32 months, the fifth molar appears near the end of the second year, in the back part of each jaw; in the course of the third year, the second permanent molar appears. The third permanent incisor comes after 3 years, but it may not come until near the end of the 4th year. A chart of the teeth may be had at this office, (price $1, post paid), by which their manner of growth can be understood.

Sheep Keeping in Kansas.—"F. M. M.," Girard Co., Ky. Sheep can be kept easily in Western Kansas. About Dodge City is a suitable locality, as it is not thickly settled. For a flock of 1,000, a capital of at least $3.000 will be required. The sheep can be purchased at Denver, Colorado, and driven slowly across the country to Kansas. One man can care for 2,000 sheep.

A Wisconsin Farm Going to Louisiana.—A Grant Co., Wis., farmer writes that he does not like to see hundreds of acres of the very best land, all the manure, and sometimes the crops too, washed into the Mississippi and carried down to New Orleans, probably to help form the Deltas. This is a question in agricultural engineering, and the remedy can only be suggested by an inspection of the locality. The situation of the land may be such that it could be thrown into terraces by the plow, and thus prevent washing. Our correspondent does not state whether the land is the river "bottom" and the loss arises from overflow, when diking would be the remedy, or is steep river banks and the washing is from heavy rains. It may be the best use of such land to put it into grass, and thus hold the land.

Sulphur Fumes for Ants.—"E. M. S.," writes from Perth Amboy, N. J., that when he lived in Texas, parties went about with apparatus for destroying ants. It consisted of an arrangement for forcing the fumes of burning sulphur into the nests, and was found very effective, though the price charged by the operators was regarded as extravagant. A similar method has been found useful in California, for the destruction of ground squirrels. Those who have failed with all other methods for ridding their grounds of ants, may act upon this hint. An ordinary bellows could be rigged up to answer.

Out of His Name.—It is very annoying when every pains has been taken, to find, when it is too late, that an advertisement which one man has paid for, is accredited to some other man. Mr. G. H. Rathbun tried recently to tell people that he sold Plymouth Rocks and other fowls at Hartford Conn., but when the advertisement was published, it was made to appear, that it was one J. H.—another Rathbun altogether. G. H. Rathbun is the man who has the famous chickens.

A Feed Rack.—A reader sends sketches of a cheap feed rack and says; "I use 2 by 4-inch scantling, seven feet long for the posts, of which there are three pairs in a 16 foot rack. They should be bolted together at the top; and it is better to bolt the scantling on too." A 2 by 4 scantling is put on each side above the bottom board, shown in an end view of the rack in figure 1. The posts should project a few inches below the bottom board. The arrangement and position of these posts, makes it impossible for stock to get their feet into or upset the rack. It can be used for a part of a fence, around stacks, though

Fig. 1.—END VIEW.

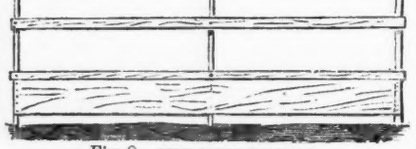

Fig. 2.—SIDE-VIEW OF RACK.

in that case the cattle can only eat from one side, ordinarily they eat from both sides. Figure 2 shows one of the sides of the rack ready for use.

Mucilage from Cherry Gum.—"H. B. D.," there is a most excellent reason for your failure to make mucilage from the gum that exudes from cherry and other fruit trees—it is not soluble in water. Though fruit-tree gums, when dry, have some resemblance to the poorer kinds of Gum Arabic, they are really very unlike. Gum Arabic will completely dissolve in water, but these gums from the cherry, etc., merely swell up, but do not dissolve; no matter how much the mass is stirred and broken up, it will, after standing a while, all settle, leaving the water without any stickiness.

Buying Seeds of Strangers.—A correspondent in Augusta Co., Va., writes that a man passed through his and other counties "selling Swedish Clover Seed, representing it as having been introduced into Penn. in 1876, through the Shaker Seed Co." The seller has since been published in some papers as a swindler, and his seeds as those of injurious weeds. Our friend and a number of other farmers are in trouble, and fear to sow the seed lest they fill their land with vile weeds, and we are written to for information on the subject. The safety of these farmers consists in the fact that it is much easier to get seeds of useful plants than those of weeds. This chap no doubt furnished old clover seed of some sort. But why buy seeds of strangers and believe their nonsense? By consulting the catalogue of any first class seed house they would have found that Swedish Clover was a regular article of their trade. Desirable novelties are not hawked about the country in this way.

Black Leg in Calves.—"H. T. F.," Peoria Co., Ill., writes that he has lost three sucking calves in as many weeks. "I first find them quite lame in the front shoulder, with blood gathering under the skin, which moves with the pressure of the hand. Death soon follows. Upon being skinned, the blood is black, and all next to the skin."—This trouble, called variously "Black Leg," "Black Quarter," "Bloody Murrain," (*Carbuncular Erysipelas*), is most frequent in young, well-fed, and rapidly growing stock. It consists of a remarkable change in the blood, with its accumulation in the shoulder, neck, breast, and near side. The disease is very rapid in its work, and a recovery from an attack is exceptional. If noticed in time, it may be prevented from taking its malignant form by changing the food to a lighter diet, and employing a purgative of 2 to 6 ounces of Epsom Salts, and a little Linseed Oil. The warm weather of early spring is the most favorable time for the development of the disease, and it should be watched for.

Trotting Horses.—At the close of the trotting season of 1879, there were fifty-four horses with a record of 2:20. Of these over one-half are the descendants of Rysdyk's Hambletonian. St. Julian, the fastest trotter on record,—time, 2:12¾—is a combination of the trotting elements of the Hambletonian and Clay families of horses.

English Rental Better than American Proprietary Farming.—Here is what the owner of a farm in Wisconsin writes and we give his view of the matter. Comment is unnecessary:—"Valuable as the *American Agriculturist* is, it would be much more so, if it would leave alone comparisons between English and American farmers. The truth is this: An English Farmer on a good rented farm with any surety of holding it for any length of time, is infinitely better off than an American farmer, and is placed in a much better position to make money: that is paying a rent of $5 to $10 per acre annually, in England, is better than owning land in America. I know of what I speak. I have farmed in England. This is the third and last time that I have been in the United States. Probably you think me crazy—maybe I am. I am just crazy enough to go right back again and rent a farm in England. What is a rent of $5 to $10 or $15 per acre in England for good land, compared to the prices they realize for products, and compared with our prices."

An Unfruitful Vine.—A correspondent at Dobbs' Ferry, N. Y., writes that he has an "Isabella" vine 8 or 10 years old that blooms abundantly every year, but bears no fruit. He has tried severe pruning, no pruning, and enriching the soil, but all to no purpose, while other vines of the same variety near by have an abundance of fruit. Our friend does not wish to destroy the vine, as it affords shade where it is needed, and asks: "What is the trouble with the vine?"—We think he has answered the question very completely: It does not bear. The vine may be a chance seedling, and it is a very common thing for seedling grape-vines to bear only staminate or sterile flowers. Or it may be a sport; it sometimes happens that one branch of a vine will bear different leaves, or larger or differently shaped or colored fruit from the rest of the vine. In this case a cane may have sported in the direction of producing only staminate or male flowers, and that cane was used in propagating. We should set a new vine or vines, to take the place of this; as the new vines get large enough to produce shade, cut away a part of the old one; in two or three years it can be replaced by other vines, and no perceptible amount of shade be lost, while fruit will be gained.

Corn Cobs.—During the past six months corn cobs and the meal from them have attracted considerable attention. Not many years ago they were thought worthless as an article of food, and are now generally thrown away. Of late a number of analyses of corn cobs have been made, all of which are much in their favor. Prof. Stœckhardt, of Germany, rates the nutritious value of cob meal as high as that of fresh potatoes, and says that it is more digestible than straw. The next question, and the one which as yet does not seem to be answered, is: What is the influence of this meal upon the animal? Does it clog the paunch as claimed by some? The chemistry of cob meal is one thing and the practical feeding value of it, is another; will they both agree in its being an important addition to the list of our feeding stuffs? Any analysis *may* show a nutritive value that the animal's stomach fails to discover. The value to the farmer of cobs, as a feeding stuff, can only be ascertained by accurate experiments in feeding. If any such have been made they should be made public.

Our Field Experiments.—Prof. Atwater writes "In the descriptive pamphlet prepared to go with the Experimental Fertilizers offered by the *American Agriculturist*, I have taken pains to explain about the experiments, and how to make and interpret them. I shall be happy to receive questions and suggestions, and will reply as promptly and fully as my time will allow." Address communications to Prof. W. O. Atwater, Middletown, Ct.—[EDS.]

Toads Eating Bees.—A French observer, M. Brunet, has seen a single toad in his garden catch, and devour, twelve honey bees in rapid succession. Upon moving the toad to some distance from the hives, it returned to its attacks upon the "hot-footed" insects.

Catalogues Received.

SEEDSMEN.

WM. H. CARSON, 125 Chambers Street, New York. Through some oversight this was not acknowledged at the time it was received, though it came among the earliest. It is not too late to say that it is one of the very neatest and fullest, while in the way of novelties it is in the foremost rank.

FRANK FORD, Ravenna, Ohio. Seed Potato list and Alpha Tomato.

AARON LOW, Essex, Mass. A full and illustrated list, with Low's Hybrid Squash and other specialties.

I. J. SIMONSON, 63 Barclay Street. An abridged list of Seeds and Plants.

ROBERT VIETCH & SONS, New Haven, Conn. A full Seed catalogue, to which a large Plant list is appended.

NURSERYMEN.

BAIRD & TUTTLE, Bloomington, Ill. This is the Nursery established by F. K. Phœnix, and appears to be as full as formerly.

R. J. BLACK, Bremen, Ohio. Besides the well known varieties, a remarkable list of New and Rare Apples, Dyehouse Cherry, etc.

GEO. W. CAMPBELL, Delaware, Ohio. Grape Vines, including novelties, other Fruits and Flowers.

R. DOUGLAS & SONS, Waukegan, Ill. A special list of very rare Evergreen Seedlings.

ELLWANGER & BARRY, Rochester, N. Y. Descriptive catalogue of Ornamental Trees, Shrubs, etc., as full and as wonderful in its way as the Fruit list noted last month.

G. H. & J. H. HALE, South Glastonbury, Conn. Small Fruits, Champion Quince, etc.

PARLEY & ANDERSON, Union Springs, N. Y. Fruit and Ornamental Stock. The Duchess Grape a specialty.

A. HANCE & SON, Red Bank, N. J. A full stock in every department, and several specialties.

GEO. S. JOSSELYN, Fredonia, N. Y. Grape Vines and Small Fruits.

JACOB W. MANNING, Reading, Mass. General stock, Evergreens a specialty. Various novelties.

THOMAS MEEHAN, Germantown, Pa. A wonderfully full collection, with many rarities.

B. MOODY & SONS, Lockport, N. Y. Wholesale lists at very low rates.

WILLIAM PARRY, Cinnaminson, N. J. Small Fruits, with several new varieties of Fruit and Ornamental Trees.

J. A. VAUGHN & Co., Carver, Mass. General collection of Fruit and Ornamental Trees.

G. ZIMMERMAN & SON, Buffalo, N. Y. An illustrated catalogue of Fruit and Ornamental stock

FLORISTS.

N. ADMIRAL, Danville, Ill. Greenhouse and Bedding Plants in great variety.

BAIRD & TUTTLE, Bloomington, Ill. A large and full illustrated Plant catalogue.

G. R. CLARK, Scranton, Pa. Besides Greenhouse Plants makes a specialty of Vegetable Plants.

EDWARD GILLETT, Southwick, Mass. Native Perennial Plants, Shrubs, Ferns, etc.

HOOPES BRO. & THOMAS, Westchester, Pa. Although the Greenhouse business is secondary to that of the Nursery, the list is as large as if this were the sole business.

HOVEY & Co., 16 South Market Street, Boston, Mass. Very full, and includes the wonderful new Camellias.

DAVID LITTLE & Co., Plattsburgh, N. Y. A large stock, including novelties.

TYRA MONTGOMERY, Mattoon, Ill. General Greenhouse and special Geranium catalogues.

JOHN SAUL, Washington, D. C. A catalogue of over 120 pages, with the usual share of Rare and New Plants, besides a splendid Rose list.

GEORGE SUCH, South Amboy, N. J. Spring catalogue of Bedding Plants, Gladiolus, etc., as neat in appearance and as rich in contents as its predecessors.

W. B. WOODRUFF, Westfield, N. J., adds to Bedding Plants, Cabbage, Tomato, and others, thus blending the useful with the sweet.

FOREIGN CATALOGUES.

STEELE BROS. & Co., Toronto, Canada. A very full illustrated "Seed Annual."

D. LUCCHETTI & Co., Milan, Italy. Field and Garden Seeds, and Seeds of American Grapes.

FERTILIZERS.

H. J. BAKER & BRO., 215 Pearl Street, N. Y. Forester's Complete Manures.

MATFIELD FERTILIZER Co., 13 Doane Street, Boston, Mass. A treatise on the Matfield Fertilizers, and directions for use.

MICHIGAN SALT ASS'N, Saginaw, Mich. A Treatise on "Salt as a Fertilizer."

LIVE STOCK, POULTRY, ETC.

ARMSTRONG & BOGMAN, Providence, R. I. Pea Comb American Sebrights.

SAM'L CUSHMAN, Pautucket, R. I. White Leghorns.

W. E. FIELD, Richland, N.Y. Poultry, Trout, and Bees.

GEO. S. JOSSELYN, Fredonia, N. Y. Fowls, Ducks, and Geese.

F. B. REDFIELD, Batavia, N. Y. Polled Angus and Short Horn Cattle, and Trotting Horses.

W. L. MALLOW, New Holland, Ohio. Ayrshire Cattle, Berkshire Pigs, Cotswold Sheep and Poultry.

L. C. ROOT & BRO., Mohawk, N. Y. Italian Bees, and all appliances used in Bee-keeping.

MACHINERY AND MISCELLANEOUS.

AMERICAN STEAM APPLIANCE Co., 12 and 15 Park Row, N. Y. Feed Governors, Water Indicators, etc.

BLYMYER MANUFATURING Co., Cincinnati, Ohio. This, the oldest establishment engaged in making Sorghum and Sugar machinery, is ready to meet the renewed activity in Sorghum culture.

BOOMER & BOSCHERT, Syracuse, N. Y. Full descriptions and illustrations of their remarkable Cider and Wine Presses.

H. B. GRIFFING, 70 Cortlandt Street, N. Y. Farm Implements, Fertilizers, Chemicals, etc.

ALLEN GOVERNOR Co., Boston, Mass. Governors for Steam Engines.

A. & F. BROWN, 57, 59, and 61 Lewis Street, N. Y. Hangers, Pulleys, and other machinery.

EUREKA MOWER Co., Towanda, Pa. Mowing machines.

JAS. W. QUEEN & Co., 924 Chestnut St., Philadelphia, Pa. Microscopes, Telescopes, etc.

GEO. W. TAFT, Abbington, Conn. Benefactor Road Scraper.

WM. SELLERS & Co., 79 Liberty Street, N. Y. Shafts, Hangers, Pulleys, and other machinery.

WILLSON & SONS, Columbus, Ohio. Cast-Steel, Spiral Spring Whiffle Trees.

WITHINGTON & COOLEY, Jackson, Mich., make Garden and Farming Tools, and issue a beautiful catalogue.

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This Beautiful Piano Upright Cabinet or Parlor Organ. (like cut) **New Style A, or No. 2400.** Dimensions—Height 5 inches, Depth 24 inches, Length 52 inches. **Three** (3) **sets of Golden Tongue Reeds, Thirteen** (13) **stops.** (1.) Violina, (2.) Echo, (3.) Viola, (4.) Diapason, (5.) Melodia Forte, (6.) **VOX CELESTE,** (7.) **GRAND ORGAN,** (8.) Celestina, (9.) Flute Forte, (10.) Melodia, (11.) Flute, (12.) Dulcet, (13.) **VOX HUMANA** or **TREMELO. Five Octaves. Upright Bellows,** with immense power. Lamp Stands at each end. Beatty's Improved Knee Swell, and Beatty's New Excelsior Grand Organ Knee Swell. Magnificent highly finished Black Walnut Case and Elegant French Veneered Panels latest design extension top with beautiful music receptacle. All late improvements. Weight when boxed about 375 lbs. This **Organ contains Beatty's New Vox Celeste Stop, which is by far the sweetest and most perfect that has ever been attained.** Charming! is the universal exclamation of critics and lovers of sweet music who have heard this combination. The sudden burst of harmony thrown out by the Beatty Grand Organ Excelsior Knee Swell, from the scale being performed by a professional, is inimitable: all things considered, this instrument is the finest Cabinet Organ in America. I challenge its equal. Beware of imitation. Buy only the genuine Beatty.

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☞ Can be shipped on an Hour's Notice. Please send your order by letter or telegraph. No money required until you are entirely satisfied. Pay for the instrument only after you have fully tested it at your own home. If it is not as represented, return it at my expense, I paying freight both ways. This certainly is a fair offer. Remember that this offer is not good after the 30 days are up, and that I positively will not deviate from this price.

FULLY WARRANTED FOR SIX YEARS!

I want this instrument more generally introduced, hence this unparalleled offer. It is about the actual cost of manufacturing. **ORDER AT ONCE,** as every Organ when introduced in a new locality sells others. My instruments are first-class and just as represented. **It is a Standing Advertisement.** Hence I can give you a **splendid bargain,** by selling you the first one at about cost. You will do well to accept this offer. At this writing our order No. stands **72,819,** (Seventy-two thousand, eight hundred and nineteen) of **Beatty's Celebrated Pianos and Organs** in actual use throughout the civilized world, and I challenge any one to show one that does not give perfect satisfaction. Sales now very large, constantly increasing at a rapid rate. **The most successful house in America.** More **unsolicited testimonials** than any manufacturer. Send for list of names of persons who are using my instruments everywhere, some may be in your neighborhood, whom you may know. I have extended my sales now over the entire world. **The Sun shines nowhere but it lights my instruments.** Since my return from an extended tour through the Continent of **Europe,** I am more determined than ever that no city, town or village throughout the entire civilized world shall be unrepresented by my celebrated instruments. Beware of imitations! My great success has brought into existence hundreds of irresponsible imitators. Beware! Buy the best but avoid the monopolists and irresponsible houses.

☞ This is the only Establishment in the world that uses the **Celebrated Golden Tongue Reeds!** The greatest invention of the 19th century. Having been **Elected Mayor** of my city by an overwhelming majority is sufficient proof of my popularity at home. **This Advertisement will appear but once,** and nothing can be saved on this instrument by correspondence. **Order now!** If you do not want one yourself, order one and make your friend a handsome present.

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DANIEL F. BEATTY, Washington, New Jersey.

$1000, REWARD

For any Washing Machine that will Wash Cleaner, Quicker, with Less Labor and Wear and Tear of Clothes than the

ROBBINS FAMILY WASHER AND BLEACHER, PAT'D OCT. 3, '71.

THE ORIGINAL AND ONLY PERFECT SELF-OPERATING WASHER IN THE WORLD.

No rubbing required. No more yellow clothes nor hard work on washing day. No more rubbing clothes full of holes. Seeing is believing, and if you will try it once, you will never again wash without it, nor use any other washing machine. IT IS THE BEST IN THE WORLD, and will wash anything from a lace curtain to a horse blanket, and can not get out of order.

Good Agents Wanted, both Male and Female, to whom Liberal Inducements are Offered.

Agents can make from $10 to $100 per week.

THE ART OF CLEANSING FABRICS,

is yet but imperfectly understood by thousands of good house-keepers. The numerous devices of friction rollers, pounders, squeezers, dashers, agitators, steam wash-boilers, etc., have all failed in one or more of the three essential points, namely: The saving of labor, wear and tear of clothes, or in perfectly extracting the dirt and discoloration; all of which are accomplished by the ROBBINS FAMILY WASHER AND BLEACHER,

WHAT IS IT REMOVES THE DIRT?

You may ask washer-women and house-keepers, and your answer from nine out of ten will be, "Plenty of elbow-grease," or in other words, laborious rubbing upon the wash-board. And such is the case, for you first rub soap upon the cloth, and then you have to *rub it in* to make the dirt soluble; but does that remove it? No; to do that you must dip it in the water and rub repeatedly to *force water* through the fabric, again and again. That is what removes dirt after having been softened by the chemical action of the soap.

The way in which this could be most economically accomplished has been developed in the FAMILY WASHER AND BLEACHER, which embodies all the above points.

Mechanical devices take the entire time of a person during the whole wash, and will not remove streaks from clothes. With the Washer and Bleacher washing, baking, and housework are contemporaneous operations—the fire doing the washing and baking, while the housewife does her housework.

It is harder work to operate these *mechanical devices* than to use the common wash-board. They are constantly getting out of order, and wear out in a short time. They wear out clothes faster than the rubbing-board, because the friction is so much greater.

All who have tried steam wash-boilers will unite with us in saying: They do not give satisfaction.

WE WILL EXPLAIN WHY.

As stated, *water force* is what removes dirt from the fibre of the cloth. A large body of water is required to hold in solution a comparatively small amount of dirt. Steam wash-boilers *cannot* accomplish the desired result. They do not contain enough water to hold the dirt in solution. While steam will not *remove* dirt, it is a powerful agent to *assist* in cleansing, because it expands the fabric, and causes the discharge of dirt and impurities from the cloth that cannot be forced out in any other way, unless by the *application of heat and force of water* combined.

In order to remove the dirt from *steamed* clothes, they must be washed out in water at nearly boiling heat, for if you use water at a lower temperature it causes the fabric to contract, which "sets the dirt," thus causing the clothes to turn yellow. An essential thing to be mentioned is the *rotting* of clothes by *steam wash-boilers*, because of the small *quantity of water* used.

Everybody knows that a large quantity of soap dissolved in a small body of water must necessarily form an *exceedingly strong alkali*, which, after the clothes are *packed* in the steam wash-boiler, is converted into steam, every moment becoming more concentrated till the clothes are removed. A few such washings and what is the result? Simply this: Your clothes fall to pieces of their own weight, and you pronounce *steam wash-boilers* (as they are) *a failure*.

THE PRINCIPLE OF THE WASHER AND BLEACHER embodies all the essential points. First, we have the desired heat which expands the fabric and causes it to discharge the dirt. Second, we obtain a powerful suction beneath the clothes, which produces a rapid *downward current* or *water force*, through and through them, thereby removing the dirt. Third, we use a *large body of water*, which holds the dirt in solution. Fourth, we use but a small quantity of soap. Fifth, the washing is done by water, and *not by steam*. This process cannot injure fabrics. It cleanses thoroughly, *rinsing the clothes* being all that is required to complete the operation.

THE CAPACITY OF THE WASHER AND BLEACHER.

There are two sizes: No. 1, the family size; No. 2, suitable for small hotels, restaurants, and barber-shops, boarding-houses, etc.

The Washer is composed of metal and cannot get out of order.

The family size weighs about 5 lbs., and is only 8 inches long by 5 inches wide, and 1¾-inch deep.

The discharge pipe is 18 inches high over that, and is 1¼ inch in diameter. It throws water in a solid, unbroken stream, at the rate of 6 to 8 gallons per minute. It will work in any flat bottom boiler. It takes only 3 or 4 ounces of soap in 10 or 12 gallons of water, and will wash bed or table linen, a boiler full in 10 to 15 minutes, wearing apparel in from 10 to 30 minutes, and will remove streaks without rubbing; requires no previous preparation of the clothes, such as soaking over night. Take the clothes dry, and when the Washer gets *thoroughly at work*, fill the boiler as full as it will hold by gently pressing them down with a stick. Use no chemicals, only good soap and soft water. If the water is hard, it may be softened by a small piece of borax, which is harmless.

FOR LACE CURTAINS this Washer is *invaluable*. It cleanses them as no other process can, and without the slightest danger of injury.

No. 2, or small hotel size, is 8¾ in. long, 7¾ in. wide, 1¾ in. deep, and weighs about 8 lbs. It will work in a flat bottom boiler holding 15 to 25 gallons, and wash of average pieces from 1,500 to 2,000 per day; or it may be used in any smaller boiler that has a flat bottom large enough for it to rest upon.

For hospitals this Washer is pronounced by the medical faculty invaluable, being the most *powerful disinfector* known; leaving the fabrics pure as when new. By engineers, mechanics, and scientific men generally, it is pronounced one of the most wonderful discoveries in the principle of hydraulics or *water force* ever brought to light. By bleachers and chemists it is said to be the most powerful method of removing dirt and vegetable matter from fabrics ever known. It is the greatest *bleacher* extant and for that alone is worth ten times the price.

THE PHILOSOPHY OF THE WASHER AND BLEACHER IS THIS:

We have 5 lbs. of metal, which attains a much greater degree of heat than the water surrounding it, consequently the water *underneath* the Washer becomes hotter and more expansive than in any other part of the boiler, and is thereby thrown to the surface through the tube; thus tending to produce a vacuum underneath the Washer at the bottom of the boiler, into which the water is rapidly drawn.

As it passes along the channels of the Washer, the curved and contracted throats of which prevent its flowing backward, and being held in contact with the hot metal it becomes hotter and hotter, consequently more expansive and more forcible until thrown to the surface, thus producing a powerful suction beneath the clothes *through which* the water *must pass* in a rapid *downward current*, thereby obtaining a *water force* which cannot be obtained by any other method known in cleansing fabrics. Thus, we get a combination. **FIRST, WE HAVE THE DESIRED HEAT. SECOND, PERFECT CHEMICAL ACTION OF THE SOAP. THIRD, FORCE OF WATER—ALL OF WHICH ARE REQUIRED TO THOROUGHLY CLEANSE AND PURIFY ANY FABRIC.**

THE IMPROVED WASHER,

has a perfect fitting pipe, and is a combination of metals which does not become sticky or dirty. It comes out of the boiler as bright as new.

A WORD ABOUT BLEACHING.

There are few professional bleachers in the United States. The word "bleaching" implies the art of extracting vegetable or animal matter and discoloration from the various fibres which constitute all our different fabrics. This is done by a regular chemical process, consisting, first, of alkaline boilings; second, immersions in solutions of chloride of lime; third, solutions of acids. After each process the goods receive a thorough rinsing in clear water, then last of all processes to thoroughly extract all injurious matter, comes that of *boiling in good soap and water*. This leaves the goods pure and white as snow, ready to finish for the market. Now the question arises, can those fabrics again absorb and *fix* all their natural discolorations? We answer no, impossible. Then why is it (asks the housewife) my clothes become yellow and discolored? There are many reasons—poor soap, hard water, careless servants, not having strength to *rub* out the dirt yourselves, and not being able to use water by hand *hot enough* to keep the fabric expanded to the extent which is absolutely requisite to thoroughly *extract the dirt*, or "bleach the clothes." Clothes should never be *bleached* but once, but *thoroughly washed*, and they will *always be white*. THE FAMILY WASHER AND BLEACHER will do it for you *every time*.

THE INDUCEMENTS WE OFFER.

We want a Local Agent in every town in the United States. We *know* from experience that reliable, energetic men can make money selling the Washer and Bleacher in any community.

We want first-class men as GENERAL AGENTS; men capable of managing one or more counties.

To such we give a duly executed Certificate of Agency.

We furnish descriptive circulars for distribution among families. Also large posters for advertising in public places. Printed directions for using are sent with each Washer.

The retail price of No. 1 WASHER, in New York, is $3.50; No. 2 WASHER, $5.00; No. 1, $24.00 per dozen; No. 2, $36.00 per dozen.

SAMPLE, OR SINGLE WASHERS.

In States east of the Missouri and Mississippi Rivers, also in Kansas and Nebraska we will deliver at your nearest railway express office, CHARGES PREPAID, Sample No. 1 WASHER, $3.50. Sample No. 2 WASHER, $5.00. We will deliver, PREPAID, a No. 1 WASHER in Dakota, at Bismarck, or Yankton, for $3.50; in Wyoming, at Cheyenne, for $3.50; in Idaho, at Franklin City, for $4.50; in Colorado, at Denver, or Pueblo, for $4; in New Mexico, at Santa Fe, for $5; in Arizona, at Prescott, for $8.50; in Utan, at Ogden, for $4; in Nevada, at Virginia City, for $5; in Louisiana, at New Orleans, for $3.50; in Arkansas, at Little Rock, for $3.50; in Texas, at Corsicana, for $4.50; at Texarkana, Denison, or Sherman, for $3.50. For the Pacific coast we will deliver No. 1 at San Francisco, Sacramento, Marysville, or San Jose, for $4. Our reason for so doing is to induce people to investigate this matter, feeling assured that a *trial* will secure an Agent for us.

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As to the reliability of this Company, we refer you to the MERCANTILE NATIONAL BANK of this city, or to any Express Company in New York. Also to the Publishers of the following named well known leading journals, viz.:—New York—*American Agriculturist*, Weekly *Sun*, Weekly *Times*, Weekly *Tribune*, Weekly *Witness*, Weekly *World*, *Christian Advocate*, Boston *Youth's Companion*, Chicago *Inter-Ocean*, Cincinnati *Gazette*, Toledo *Blade*, Springfield *Farm & Fireside*, all of whom have more or less frequently editorially endorsed *us as well as our Washer*.

In ordering, write plainly your name, post-office, county, and State. Also the name of the express office to which you wish the Washer forwarded.

CASH MUST ACCOMPANY ALL ORDERS,

Remit by Post-office Order or Registered Letter, *at our risk*. We insure the safe delivery of all Washers ordered as above. Money may also be sent by draft on New York.

Send for a sample and secure A BUSINESS THAT WILL PAY YOU WELL.

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These pumps have enormous power, and are for the house or for **out-door wells** of any depth. They are constructed with special regard to strength, ease of working, and durability. They can be immediately changed from lift to force pumps, and the air chamber can be revolved, so as to allow the handle to work at any desired angle with the spout. Having close tops, they cannot be tampered with. Attention is called to our new elegant pattern **DEEP WELL non-freezing FIRE PUMP. Also, Blunt's Sand Vacuum Chambers.**—A complete protection against sand or gritty water in **dug or driven wells, pits, mines, and rivers.** For **hand or steam pumps**, all sizes, from 1¼-inch to 4-inch suction pipe.

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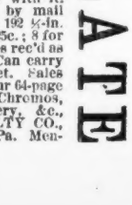

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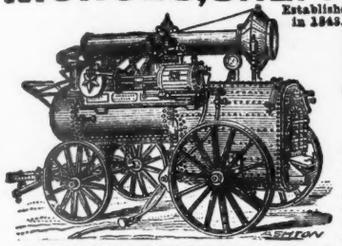

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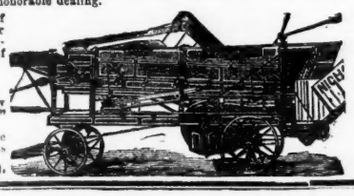

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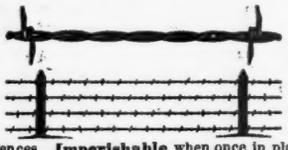

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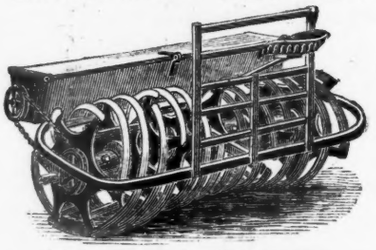

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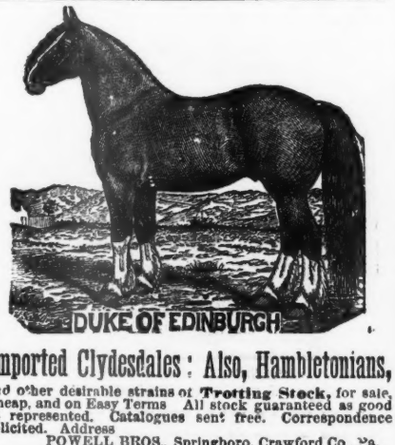

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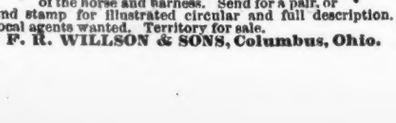

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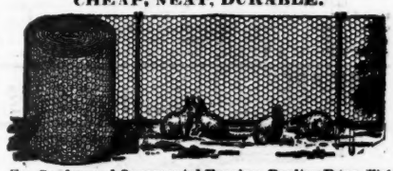

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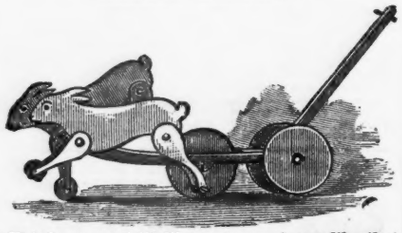

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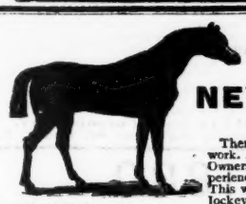

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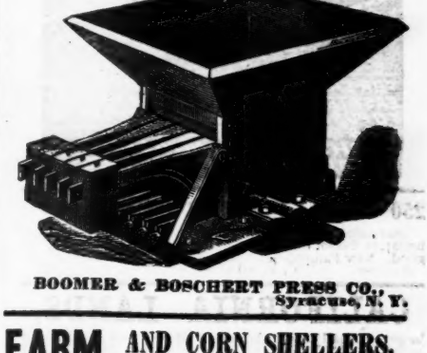

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